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Vol. 1060 Number 2

OFFICIAL GAZETTE

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November 12, 1985

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 12, 1985 Volume 1060 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Oct. 21, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 9, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,357,714 through 4,358,858
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

Re. 31,396, Re. S.N. 780,516, Filed Sept. 26, 1985, Cl. 260/112.5R, A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION, Robert L. Hamill, et al., Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.*, Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 157

4,206,872, Re. S.N. 780,412, Filed Sept. 26, 1985, Cl. 236/046, ELECTRONIC THERMOSTAT, Michael R. Levine, Owner of Record: *Inventor,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 234

4,374,347, Re. S.N. 702,182, Filed Feb. 15, 1985, Cl. 318/138, BRUSHLESS D-C MOTOR SYSTEM, Rolf Muller, Owner of Record: *Papst-Motoren KG., St. Georgen, Germany,* Attorney or Agent: Theodore J. Koss, Jr., Ex. Gp.: 217

4,396,543, Re. S.N. 780,130, Filed Sept. 25, 1985, Cl. 260/112.50R, DERIVATIVES OF A-21978C CYCLIC PEPTIDES, Manuel Debono, Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,399,067, Re. S.N. 779,372, Filed Sept. 23, 1985, Cl. 260/112.50R, DERIVATIVES OF A-21978C PEPTIDES, Manuel Debono, Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,403,572, Re. S.N. 775,661, Filed Sept. 13, 1985, Cl. 122/20.00B, COMBUSTION PRODUCT CONDENSING WATER HEATER, Joseph Gerstmann, et al., Owner of Record: *Advanced Mechanical Technology, Inc., Newton, Mass.,* Attorney or Agent: David E. Brook, et al., Ex. Gp.: 344

4,405,336, Re. S.N. 777,540, Filed Sept. 18, 1985, Cl. 44/056, FUEL COMPOSITION, Stephen L. Badger, Owner of Record: *Tandy Wansley, Valley Park, Miss.,* Attorney or Agent: E. Mickey Hubbard, et al., Ex. Gp.: 116

4,409,896, Re. S.N. 777,719, Filed Sept. 19, 1985, Cl. 91/491, PRESSURIZED FLUID ENGINE EQUIPPED WITH MEANS FOR SELECTING ITS SPEED OF ROTATION, Bernard R. Allart, et al., Owner of Record: *Poclain Hydraulics, Verberie, France,* Attorney or Agent: Thomas B. Van Poole, et al, Ex. Gp.: 342

4,418,919, Re. S.N. 777,481, Filed Sept. 18, 1985, Cl. 272/040, MECHANICAL SEALS WITH SETTING BLOCK FOR USE WITH SLURRY PUMPS, Robert S. Wentworth, Owner of Record: *Borg-Warner Corp., Chicago, Ill.,* Attorney or Agent: R. L. Zieg, et al., Ex. Gp.: 246

4,452,462, Re. S.N. 776,262, Filed Sept. 16, 1985, Cl. 277/105, TEMPERATURE RESISTANT JOINT PACKING WITH E-SHAPED SPRING SEAL, Michael A. Karr, Jr., Owner of Record: *Gray Tool Co., Houston, Tex.,* Attorney or Agent: Richard H. Berneike, et al., Ex. Gp.: 246

4,531,382, Re. S.N. 776,622, Filed Sept. 16, 1985, Cl. 62/375, SPIN COOLER, Donald L. Butler, et al., Owner of Record: *Aeroglide Corp., Raleigh, N.C.,* Attorney or Agent: John G. Mills, III, et al., Ex. Gp.: 344

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,388,009, Reexam. No. 90/000,856, Requested: Sept. 16, 1985, Cl. 148/1.5, METHOD OF FORMING A P-N JUNCTION BY AN IONIC BEAM, William J. King, Owner of Record: *General Instrument Corp., New York, N.Y.,* Attorney or Agent: James and Franklin, Ex. Gp.: 114, Requester: General Instrument Corp., New York, N.Y.

3,415,374, Reexam. No. 90/000,865, Requested: Sept. 17, 1985, Cl. 209/211, METHOD AND APPARATUS FOR VORTICAL SEPARATION OF SOLIDS, Nils Anders L. Wikdahl, Owner of Record: *Inventor, Djursholm, Sweden,* Attorney or Agent: Leydig, Voit, et al., Ex. Gp.: 130, Requester: Hydrocyclone Technology, Inc., Stone Mountain, Ga.

3,613,887, Reexam. No. 90/000,863, Requested: Sept. 17, 1985, Cl. 209/211, CYCLONE SEPARATOR TO BE BUILT — IN A CASING OR SIMILAR, Nils Anders L. Wikdahl, Owner of Record: *Inventor, Djursholm, Sweden,* Attorney or Agent: Leydig, Voit, et al., Ex. Gp.: 130, Requester: Hydrocyclone Technology, Inc., Stone Mountain, Ga.

3,937,893, Reexam. No. 90/000,876, Requested: Oct. 4, 1985, Cl. 179/6.14, AUTOMATIC TELEPHONE ANSWERING DEVICE, Willy Muller, et al., Owner of Record: *Uhag Uebersee-Handel AG.,Zurich, Switzerland,* Attorney or Agent: J. Gibson Semmes, Ex. Gp.: 261, Requester: Chittaranjan N. Nirmel, Alexandria, Va.

4,298,551, Reexam. No. 90/000,873, Requested: Oct. 4, 1985, Cl. 261/121, APPLIANCE FOR MAKING AN AERATED BEVERAGE, Rune F. R. Adolfsson, Owner of Record: *Thorn Emi Domestic Appliances, Ltd., London, England,* Attorney or Agent: Fleit, Jacobson, et al., Ex. Gp.: 130, Requester: Owner

4,429,885, Reexam. No. 90/000,871, Requested: Oct. 2, 1985, Cl. 277/140, SPACER AND EXPANDER MEMBER FOR HOLDING AND BIASING PISTON RING RAILS, Ko Chiba, et al., Owner of Record: *Kabushiki Kaisha Riken, Tokyo, Japan,* Attorney or Agent: Arthur Garrett, Ex. Gp.: 240, Requester: TRW Automotive Products, Inc., Cleveland, Ohio

4,451,913, Reexam. No. 90/000,870, Requested: Sept. 30, 1985, Cl. 369/110, VIDEO DISC READ BACK SCANNER, James E. Elliott, Owner of Record: *Discovision Associates, Costa Mesa, Calif.,* Attorney or Agent: Ronald J. Clark, Ex. Gp.: 235, Requester: Discovision Associates, Costa Mesa, Calif.

4,500,753, Reexam. No. 90/000,875, Requested: Oct. 4, 1985, Cl. 179/6.03, TELEPHONE ANSWERING APPARATUS WITH RECORDED TIME OF DAY AND DATE, Luther Plunkett, Jr., Owner of Record: *Lanier Business Products, Inc., Atlanta, Ga.,* Attorney or Agent: Jones & Askew, Ex. Gp.: 260, Requester: Chittaranjan N. Nirmel, Alexandria, Va.

4,503,304, Reexam. No. 90/000,869, Requested: Sept. 30, 1985, Cl. 219/10.49R, INDUCTIVE HEATING DEVICE HAVING A PLURALITY OF HEATING COIL UNITS, Toru Hoshikawa, et al., Owner of Record: *Mitsubishi Denki Kabushiki Toyo Tanso Co., Ltd., Osaka, Japan,* Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 210, Requester: Ajax Magnethermic Corp., Warren, Ohio

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Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to the registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Spalt Associates Corp., Hanover, Mass., Reg. No. 1,136,079, for the mark "VIKING", Canc. No. 14,907.

Jeffrey Sau-Chi Wong, Ontario, Can., Reg. No. 1,163,865, for the mark "HECK AND DESIGN", Canc. No. 14,635.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Errata

"All reference to Patent No. 4,537,592, to John K. Dysart, et al., of Cincinnati, Ohio for 'COMPOSITE WASTE-CONTAINMENT GARMENT HAVING DISPOSABLE ELASTICIZED INSERT' appearing in the Official Gazette of Aug. 27, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,546,308, to Don F. Widmayer of Maryland for 'CONTROL OF AC POWER TO INDUCTIVE LOADS' appearing in the Official Gazette of Oct. 8, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,547,671, to Robert W. Allington of Lincoln, Nebr. for 'METHOD AND APPARATUS FOR REDUCING SCHLIEREN NOISE IN A LIQUID CHROMATOGRAPH' appearing in the Official Gazette of Oct. 15, 1985, should be deleted since no patent was granted."

Patents Available for License or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patent upon reasonable terms to domestic manufacturers.

Applications for license under the following patents should be addressed to: Division Patent Counsel, Power Delivery Division, General Electric Co., 1016 W. Ninth Ave., King of Prussia, Pa. 19406

4,387,280. HIGH SPEED HYDRAULICALLY-ACTUATED OPERATING SYSTEM FOR AN ELECTRIC CIRCUIT BREAKER.

4,398,255. POLYPHASE ANGLE ESTIMATOR.

4,409,447. GAS BLAST CIRCUIT BREAKER COMBINING A MAGNETICALLY DRIVEN ROTATING ARC AND A PUFFER INDUCED GAS BLAST.

4,410,456. ADDITIVES FOR ENHANCING CORONA STABILIZATION IN ELECTRONEGATIVE GASES.

4,410,585. LAYER INSULATION FOR USE IN HIGH VOLTAGE ELECTRICAL EQUIPMENT.

4,433,221. IMPEDANCE CONTACT ASSEMBLY FOR AN ELECTRIC CIRCUIT BREAKER.

4,459,629. ELECTRIC CIRCUIT BREAKER UTILIZING SEMICONDUCTOR DIODES FOR FACILITATING INTERRUPTION.

4,511,203. DEVICE FOR PROVIDING ATTACHMENT TO SPACED PARALLEL CABLES OR RODS.

4,522,771. METHOD OF FABRICATING LAYER INSULATION FOR USE IN HIGH-VOLTAGE ELECTRICAL EQUIPMENT.

4,479,104. TRANSFORMER CORE HAVING CHARGE DISSIPATION FACILITY.

4,484,247. NONFRAGMENTING STATION ARRESTER.

4,495,459. SURGE ARRESTER DISCHARGE COUNTING APPARATUS.

4,513,534. SHUTTER FOR VENTILATION SYSTEMS. *Peter K. Kontler,* One Landmark Sq., Stamford, Conn. 06901. Phone (203) 348-6719.

4,532,410. LOW VOLTAGE BATTERY OPERATED HEATING BIB. *Betty Wehmeyer,* P.O. Box 118, Ingram, Tex. 78025.

4,461,084. INTERNAL MEASURING GAUGE. *Roger K. Slocum,* c/o Boone, Fox & Jones, P.O. Box 865, Los Altos, Calif. 94023-0865. Phone (408) 255-5124.

4,553,739. FLEXIBLE BARRIER HOLDING AND MANIPULATING MECHANISM. *Richard M. Baines, Rte. 7, Sentry Dr., Cartersville, Ga. 30120.*

PATENT NOTICES

Certificates of Correction for the Week of Nov. 12, 1985

Re. 28,565	4,490,643	4,518,777	4,531,212
D. 278,318	4,491,946	4,518,887	4,531,692
3,783,831	4,495,410	4,519,359	4,531,727
4,240,859	4,498,542	4,519,567	4,531,935
4,304,577	4,501,001	4,520,107	4,532,030
4,314,001	4,501,844	4,520,379	4,532,065
4,314,392	4,502,170	4,520,394	4,532,592
4,321,191	4,502,819	4,521,494	4,532,784
4,321,791	4,503,532	4,521,662	4,532,859
4,352,573	4,503,879	4,522,909	4,532,928
4,365,370	4,504,123	4,523,327	4,532,984
4,389,741	4,504,438	4,524,333	4,533,026
4,390,826	4,504,666	4,524,411	4,533,386
4,410,428	4,506,053	4,524,587	4,533,512
4,425,424	4,506,630	4,524,903	4,533,606
4,435,833	4,506,725	4,525,108	4,533,649
4,441,126	4,507,122	4,525,302	4,533,664
4,441,168	4,507,788	4,525,490	4,533,871
4,444,564	4,509,714	4,525,637	4,534,356
4,448,435	4,509,971	4,525,739	4,534,483
4,453,102	4,510,593	4,526,088	4,534,769
4,455,307	4,510,839	4,526,672	4,534,940
4,455,820	4,511,346	4,526,760	4,535,102
4,459,350	4,511,567	4,526,958	4,535,224
4,464,036	4,512,186	4,527,115	4,535,782
4,464,116	4,513,466	4,527,136	4,536,262
4,468,507	4,513,829	4,527,374	4,536,491
4,472,583	4,514,074	4,528,044	4,536,570
4,472,966	4,515,056	4,528,099	4,536,603
4,474,790	4,515,279	4,528,267	4,536,791
4,475,049	4,515,421	4,528,422	4,537,385
4,475,338	4,515,579	4,528,585	4,537,452
4,476,242	4,515,602	4,528,642	4,537,845
4,480,436	4,516,236	4,529,977	4,537,846
4,482,952	4,516,689	4,530,180	4,538,507
4,483,137	4,517,306	4,530,418	4,538,890
4,483,778	4,518,379	4,530,997	
4,486,285	4,518,584	4,531,088	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 12, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-07-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-30-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-14-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-27-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,403,406 to 3,408,656, inclusive

Plant Patents ..... Numbers 2,835 to 2,843 inclusive

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF October 12, 1995

PATENT EXAMINING GROUPS

(Actual Filing Date of Oldest / New Case Awaiting Action)

CHEMICAL EXAMINING GROUPS

GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—O. E. TALBERT, Director 12-28-93
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director 9-01-93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director 8-12-94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—I. O. THOMAS, Director 9-07-94

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director 2-20-93
SPECIAL LAWS, ADMINISTRATION, GROUP 220—K. L. CADE, Director 12-21-93
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director 11-23-93
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. KUBASIEWICZ, Director 9-13-94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director 1-18-93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. O. KUBIN, Director 8-10-93
DESIGN, GROUP 290—K. L. CADE, Director 7-07-93

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Expiration of patents. The missing within the range of numbers indicated below expire during October 1995, except those which may have had their terms extended by disclaimer under the provisions of 35 U.S.C. 253. Other patents issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reason(s) or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 5,403,806 to 5,408,646, inclusive
Plant Patents . . . . . Numbers 7,825 to 7,840 inclusive

REEXAMINATIONS

NOVEMBER 12, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,790,476 (416th)

LATICES FOR INDUSTRIAL WASTE COAGULATION

F. Steven Spoerle, Oak Lawn; Elmer W. Palmer, Woodridge; Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Reexamination Request No. 90/000,197, May 10, 1982.
Reexamination Certificate for Patent No. 3,790,476, issued Feb. 5, 1974, Ser. No. 200,848, Nov. 22, 1971.
Continuation-in-part of Ser. No. 92,031, Dec. 15, 1970, Pat. No. 3,624,019.
The portion of the term of this patent subsequent to Nov. 30, 1988, has been disclaimed.
Int. Cl.[4] C02F *1/56*
U.S. Cl. 210—734

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

New claims **11–25** are added and determined to be patentable.

1. In a process for thickening or dewatering solids from industrial waste of the type wherein the following steps are performed:

(A) forming an aqueous solution of a water-soluble polymer or copolymer of acrylamide in water;

(B) adding said aqueous solution of polymer or copolymer of acrylamide in water formed in Step A to industrial wastes under floc forming conditions;

(C) allowing said solids to settle from said industrial wastes to provide a clear aqueous supernatant;

the improvement which comprises using an aqueous solution of polymer or copolymer of acrylamide in water which is prepared by the inversion of a polymeric latex in water, wherein said polymeric latex is produced by the steps of:

(a) forming a water-in-oil emulsion from:

(1) water which contains dissolved therein acrylamide or acrylamide with at least one other water-soluble ethylenic unsaturated monomer, thereby producing a monomer phase which has a concentration of from 30–70% by weight of said emulsion;

(2) a liquid hydrocarbon;

(3) a water-in-oil emulsifying agent in a concentration of from 0.1–10% by weight;

(4) a free radical initiator;

(b) heating said emulsion under free radical forming conditions to polymerize the acrylamide or acrylamide and at least one other water-soluble ethylenic unsaturated monomer which is contained in the emulsion; and

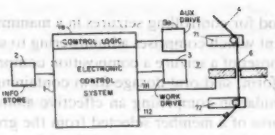
(c) polymerizing said acrylamide or acrylamide and at least one other water-soluble ethylenic unsaturated monomer in the water-in-oil emulsion to produce said polymeric latex.

B1 3,891,819 (417th)

AUTOMATIC SET-UP ELECTROEROSION MACHINING METHOD

Werner Ullmann, Locarno; Bernd Schumacher, Losone; Arno Sieg; Silvano Mattei, both of Locarno; Hans-Ueli Fenner, Ascona; Gottlieb Wettstein, and Herbert Ruh, both of Locarno, all of Switzerland, assignors to A.G. fur industrielle Elektronik AGIE, Losone, Switzerland

Reexamination Request No. 90/000,695, Dec. 21, 1984.
Reexamination Certificate for Patent No. 3,891,819, issued Jun. 24, 1975, Ser. No. 435,206, Jan. 21, 1974.
Claims priority, application Switzerland, Aug. 15, 1973, 11780/73
Int. Cl.[4] B23P *1/08*
U.S. Cl. 219—69 M



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. Method for electroerosion machining a workpiece having a starting bore by using as the machining tool a long drawn out flexible electrode capable of being gradually dispensed, comprising the steps of:

aligning said starting bore (**9**) of said workpiece (**5**) with an unencumbered straight line path provided for said electrode (**4**) by an electrode drive and guiding system (**7**);

dispensing said electrode (**4**) from an electrode supply by means of said electrode drive and guiding system (**7**);

threading said electrode (**4**) automatically by propelling it by said system in said straight line path into, through and out beyond said bore (**9**) of said workpiece (**5**) until the end of the electrode becomes firmly engaged in transport means (**79**) of a take-up mechanism (**71**) of said electrode drive and guiding system; and then

dispensing said electrode gradually through said workpiece (**5**) and said take-up mechanism (**71**) of said system (**7**) while applying electroerosion voltage thereto relative to said workpiece and subjecting said electrode and workpiece to relative movement under control of an automatic electronic machining drive system to machine a predetermined contour (**8**) in said workpiece.

B1 4,372,974 (418th)

ANTICONVULSIVE COMPOSITIONS AND METHOD OF TREATING CONVULSIVE DISORDERS

Irving Fish, Tenafly, N.J.; Stephen A. Schwartz, Bronx, and Stanley Samuels, White Plains, both of N.Y., assignors to New York University, New York, N.Y.

Reexamination Request No. 90/000,508, Feb. 21, 1984.
Reexamination Certificate for Patent No. 4,372,974, issued Feb. 8, 1983, Ser. No. 269,629, Jun. 2, 1981.
Continuation-in-part of Ser. No. 162,907, Jun. 25, 1980, Pat. No. 4,322,440.
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.
Int. Cl.[4] A61K *31/195*
U.S. Cl. 514—561

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

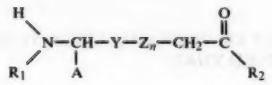
The patentability of claims **1–9** and **12–18** is confirmed.

Claims **19–38** are cancelled.

Claim **10** is determined to be patentable as amended.

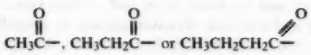
Claim **11**, dependent on an amended claim, is determined to be patentable.

1. A method for controlling seizures in a mammal in need of such treatment which comprises administering to said mammal prior to the onset of a seizure a composition comprising a solid oral dosage form, said oral dosage form containing a pharmaceutical formulation comprising an effective amount for controlling seizures of a member selected from the group consisting of compounds having the general formula



wherein

R_1 is H,



A is H, CH_3, CH_3CH_2—, HO—CH_2, HO—CH_2CH_2, CH_3OCH_2—HS—CH_2—, HS—CH_2CH_2—, CH_3SCH_2—,

Y is C=O, HC—OH or CH—A,

Z is CH—A, O, S; and

R_2 is —OH,

n is 1, and Y is CH—A when n=0, and

A+Y+Z include no more than one Oxygen or Sulfur atom and acid addition salts of such compounds,

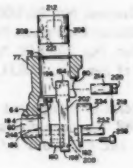
said formulation having a pH between about 1.8 and 6.0.

B1 4,406,590 (419th)

HERMETIC COMPRESSOR

Donald L. Kessler, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Reexamination Request No. 90/000,660, Nov. 5, 1984.
Reexamination Certificate for Patent No. 4,406,590, issued Sep. 27, 1983, Ser. No. 158,574, Jun. 11, 1980.
Int. Cl.[4] F04B *35/04, 39/14;* F16J *1/00*
U.S. Cl. 417—360



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

New claims **11–13** are added and determined to be patentable.

11. A compressor comprising: a crankcase with a cylinder therein, the cylinder including a sidewall; a crankshaft rotatably received in the crankcase, the cylinder sidewall including a slot therethrough, said slot being open in a direction generally facing the crankshaft; a piston slideably received in the cylinder; a connecting rod comprising a first closed loop end and a second closed loop end, the second end received over a journal portion of the crankshaft, the slot being dimensioned to receive the first closed loop end of the connecting rod; the connecting rod first end being in registry with the slot when the connecting rod and crankshaft are substantially in their bottom dead center positions, whereby the connecting rod first end can be inserted into the cylinder through the slot at the same time as the second end is slid over one end of the crankshaft; a cylindrical wrist pin journalled in the first closed loop end and journalled in aligned openings in the piston, the wrist pin being completely encircled by the first closed loop end and the openings such that the entire periphery of the openings serve as bearing surfaces for the wrist pin, the wrist pin being in registry with the slot when the connecting rod and crankshaft are substantially in their bottom dead center positions whereby the wrist pin can be inserted through the slot in the cylinder sidewall into the piston; the piston comprising a head portion and a skirt portion extending from the head portion, the skirt portion including an inner sidewall; there being a narrow gap between a first side surface of the connecting rod first end and piston skirt sidewall, a second side surface of the connecting rod first end being closely adjacent said piston skirt sidewall; and retainer means for locking the wrist pin to the piston comprising one only generally C-shaped spring clip disposed in the narrow gap, between the connecting rod first end and the piston skirt sidewall, said spring clip having a larger outer diameter than the diameter of said openings, said clip comprising two spaced apart legs having arcuate inner edges and tapered edges, said legs having a width dimension in the radial direction with respect to the axis of the wrist pin which is substantially larger than the thickness dimension of said legs in the axial direction of said wrist pin, said spring clip further including a resilient distal end interconnecting said legs, said clip being resiliently connected to the wrist pin and retained thereon, the legs straddling the wrist pin and being in engagement with a groove in the wrist pin, the spring clip having an interference fit with said groove between the first side surface of the connecting rod first end and the piston skirt inner sidewall to thereby lock the wrist pin against axial movement and retain the wrist pin within the piston.

REISSUES

NOVEMBER 12, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,025

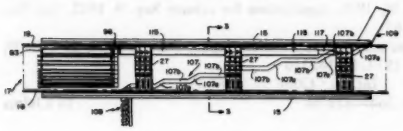
COCKTAIL FILLING MACHINE AND METHOD

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Original No. 4,304,085, dated Dec. 8, 1981, Ser. No. 93,584, Nov. 13, 1979. Application for reissue Dec. 1, 1983, Ser. No. 556,796

Int. Cl.⁴ B65B *1/36*

U.S. Cl. 53—435 **18 Claims**



14. A method for filling containers with a plurality of different kinds of [fruit] *items* comprising the steps of continuously progressing elongated conveyor flights through [fruit] *item* receiving and container filling zones, the flights each extending laterally at right angles to the direction of conveyor movement and each flight having a single row of measuring pockets disposed along the length of the flight, filling the measuring pockets of each flight with [fruit] *items* in the [fruit] *item* receiving zone, with one kind of [fruit] *item* in each pocket and while the lower end of each pocket is closed, progressing the containers to be filled with the different [fruits] *items* through the container filling zone by moving the container at the same speed as the flight and in a zig-zag path of movement being such that a container is successively shifted along the length of the flight to positions below each of the pockets of a flight as it progresses through the filling zone and dwells in each such position to receive [fruit] *items* from the associated pocket, and opening the lower end of each pocket while a container is positioned below the same to drop the [fruit] *items* therein into the container, the lower end of each pocket of a flight being opened successively thereby delivering measured amounts of the different kinds of [fruit] *items* into the container for each such position.

Re. 32,026

STRUCTURE OF WARMER

Iwao Yamashita, and Miyuki Shimizu, both of Oitashi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 3,976,049, dated Aug. 24, 1976, Ser. No. 484,236, Jun. 28, 1974. Application for reissue Apr. 13, 1984, Ser. No. 600,733

Claims priority, application Japan, Jul. 4, 1973, 48-74737; Sep. 8, 1973, 48-101485; Jan. 5, 1974, 49-5652[U]; Jan. 10, 1974, 48-5613; Feb. 27, 1974, 49-22383

Int. Cl.⁴ F24J *1/00*

U.S. Cl. 126—263 **15 Claims**

1. A unified structure of a warmer and an air-tight envelope which is used to encapsulate sealingly said warmer at non-service time, said warmer comprising means for enclosing an exothermic composition in contact with water, said means comprising a two layered bag composed of at least one air-permeable cloth layer and at least one impermeable film layer having aeration holes with a predetermined total area and arranged one within the other; said enclosing means being disposed within said air-tight envelope; and said exothermic composition which is activated on contact with air [being selected from the group consisting of iron powder, a chloride and a sulfate of a metal having an ionization tendency greater than iron and active carbon] *comprising iron powder, active carbon and a reaction promoter selected from the group consisting of a chloride and a sulfate of a metal having an ionization tendency greater than iron* filled in said bag, whereby upon opening of said airtight evelope, air contacts said exothermic composition and water to produce heat.

Re. 32,027

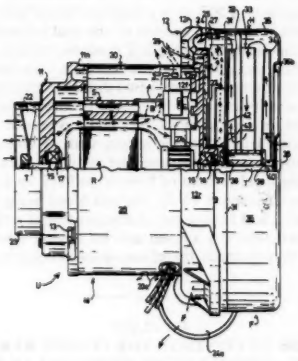
WET PICK-UP VACUUM UNIT MOTOR BEARING AIR SEAL

Robert L. Hyatt, Tallmadge, and Norbert H. Niessner, Kent, both of Ohio, assignors to Ametek, Inc., Kent, Ohio

Original No. 4,088,424, dated May 9, 1978, Ser. No. 799,241, May 23, 1977. Continuation of Ser. No. 145,667, May 1, 1980, abandoned. Application for reissue Oct. 28, 1983, Ser. No. 546,420

Int. Cl.⁴ F04B *39/06;* **A47L** *9/22*

U.S. Cl. 417—368 **11 Claims**



1. In a wet pick-up type vacuum cleaner fan unit with a cleaning working air centrifugal fan impeller mounted on a fan shaft supported in a lubricated bearing received in a central socket of a fan housing end wall,

said impeller peripherally discharging to a working air outlet of the housing located adjacent to said end wall,

the improvement comprising:

a centrally apertured disk plate circumferentially engaged and sealed upon and spaced from the fanward inner face of the said end wall;

a plurality of angularly spaced auxiliary or sealing air inlets through said wall from the exterior to an air flow space defined between the disk and end wall face;

an auxiliary centrifugal fan of smaller diameter than, and in back-to-back relation with, said working fan impeller,

said auxiliary fan being clamped on said shaft with its inlet eye facing the central aperture of said disk to receive auxiliary air therefrom;

a shield cup received with circumferential spacing in the auxiliary fan inlet eye and

having a centrally apertured flat bottom conjointly clamped with said fans on said shaft, and

extending through the central aperture of the disk to define with the edge thereof a discharge outlet from said flow space into the auxiliary fan eye;

whereby said shield and disk provide structural screening around said bearing socket and shaft, and

said auxiliary fan, shield and disk further moving auxiliary screening and sealing air axially exterior to the socket and on out to a common discharge of said back-to-back auxiliary and working air fans to prevent foam and working air entrained detergent from approaching said bearing.

Re. 32,028

DYNAMICALLY PARTIALLY CURED THERMOPLASTIC BLEND OF MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN PLASTIC

William K. Fischer, Meaford, Canada, assignor to Uniroyal, Inc., Middlebury, Conn.

Original No. 3,806,558, dated Apr. 23, 1974, Ser. No. 171,328, Aug. 12, 1971. Continuation of Ser. No. 901,400, May 1, 1978, Pat. No. Re. 31,518, Application for reissue Nov. 17, 1983, Ser. No. 552,767

Int. Cl.[4] C08L *23/26, 23/32, 23/36, 23/16*

U.S. Cl. 525—194 **12 Claims**

1. A method of making a thermoplastic blend comprising mixing monoolefin copolymer rubber, polyolefin plastic and a curative therefor, [and] masticating and shearing said materials at curing temperature to produce a partial cure insufficient to render the blend unprocessable *and substantially exhausting the action of the curative so that the thus partially cured blend has little or no tendency for further advancement of cure to take place subsequently* the amount of the said monoolefin copolymer rubber being from [50] *from a major portion of said blend* to 90 parts by weight and the amount of the said polyolefin plastic being correspondingly from [50] *a minor portion of said blend* to 10 parts by weight, the said monoolefin copolymer rubber being a compolymer of at least two different monoolefins, one of which is ethylene and the other or others being alpha-monoolefins of the formula CH_2=CHR where R is an alkyl radical having 1 to 12 carbon atoms, with or without at least one compolymerizable polyene, the resulting partially cured blend having a gel content of from 60 to 93% by weight measured in cyclohexane at 73° F., the said blend being repeatedly reprocessable, and having the characteristics of a thermoplastic elastomer, whereby shaped articles having good physical properties may be made therefrom without requiring vulcanization.

Re. 32,029

PROCESS TO CONTROL THE CURING REACTION BETWEEN A COPOLYESTER RESIN AND AN EPOXIDE COMPOUND, AND A COMPOSITION FORMED FOR THAT PROCESS

Patrick J. Pesata, Jr., Medina; Harlan W. Frerking, Jr., Alliance, and Nelson C. Bletso, Kent, all of Okla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Original No. 4,365,046, dated Dec. 21, 1982, Ser. No. 223,973, Jan. 12, 1981. Application for reissue Dec. 20, 1984, Ser. No. 683,888

Int. Cl.[4] C08L *63/00, 67/02*

U.S. Cl. 525—438 **29 Claims**

1. A process to control the activation energy of the curing reaction between a copolyester resin and an epoxide compound, comprising:

mixing with copolyester resin, from about [0.01] *0.001* to about 10 weight percent per copolyester resin weight of an aromatic acid having at least 1 carboxylic acid group and having from 7 to 20 carbon atoms, such that the copolyester resin reaction with the epoxide compound requires a higher activation energy to induce curing of the copolyester resin after compounding with said epoxide compound and during heating of the copolyester resin-epoxide compound mixture;

wherein said polymerization of the copolyester resin comprises an esterification stage, a condensation stage, a reactor compounding stage and a finishing stage; and

wherein said mixing occurs during said reactor compounding stage or said finishing stage.

Re. 32,030

CLOSED LOOP CONTROLLED AUXILIARY AIR DELIVERY SYSTEM FOR INTERNAL COMBUSTION ENGINE

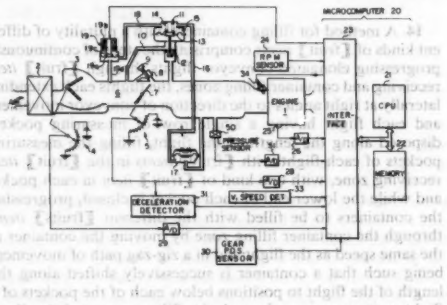
Tsuneomi Yano, Tokyo, and Haruo Yuzawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Original No. 4,240,145, dated Dec. 16, 1980, Ser. No. 965,467, Nov. 30, 1978. Application for reissue Sep. 9, 1982, Ser. No. 416,162

Claims priority, application Japan, Dec. 1, 1977, 52-143309; Dec. 1, 1977, 52-143310

Int. Cl.[4] G06F *7/70;* **F02M** *23/06, 23/08*

U.S. Cl. 364—431.04 **14 Claims**



11. A method for controlling an air control valve disposed in an auxiliary passage which is connected to a main intake passage of an internal combustion engine, the auxiliary passage extending between a portion upstream of a throttle valve disposed in the main intake passage and a portion downstream of the throttle valve, the internal combustion engine having means for supplying fuel thereto in response at least to the flow of air passing through the main intake passage, said method comprising the steps of:

detecting a vacuum within the main intake passage downstream of the throttle valve and generating a vacuum indicative signal;

determining that the engine is under deceleration and generating an elapsed time indicative signal indicative of time elapsed from the start of deceleration;

determining a maximum vacuum value for said elapsed time indicative signal and generating a maximum vacuum indicative signal, said maximum vacuum value being variable with variation of time elapsed from the start of deceleration;

comparing said vacuum indicative signal with said maximum vacuum indicative signal and generating a first difference indicative signal indicative of the difference between said vacuum indicative signal and said maximum vacuum indicative signal;

controlling the air control valve in response to said first difference indicative signal, to control the flow of air passing through the auxiliary passage to control the vacuum within the main intake passage downstream of said throttle valve so that the vacuum within the main intake passage downstream of the throttle valve becomes equal to said maximum vacuum value.

14. A control system for controlling an air control valve disposed in an auxiliary passage which is connected to a main intake passage of an internal combustion engine, said auxiliary passage

extending between a portion upstream of a throttle valve disposed in the main intake passage and a portion downstream of the throttle valve, the internal combustion engine having means for supplying fuel thereto in response at least to the flow of air passing through the main intake passage, said control system comprising:

means for detecting a vacuum within the main intake passage downstream of the throttle valve and generating a vacuum indicative signal;

a microcomputer including a memory which stores maximum vacuum values for time elapsed from the start of deceleration, and a central processor unit,

said central processor unit determining that the engine is under deceleration and generating an elapsed time indicative signal indicative of time elapsed from the start of deceleration, determining one maximum vacuum value from said stored maximum vacuum values for said elapsed time indicative signal and generating a maximum vacuum value indicative signal, and comparing said vacuum indicative signal with said maximum vacuum value indicative signal and generating a first difference indicative signal indicative of the difference between said vacuum indicative signal and said maximum vacuum value indicative signal; and

means for controlling the air control valve in response to said first difference indicative value to control the flow of air passing through the auxiliary passage to control the vacuum within the main intake passage downstream of said throttle valve so that the vacuum within the main intake passage downstream of the throttle valve becomes equal to said maximum vacuum value.

PLANT PATENTS

GRANTED NOVEMBER 12, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,581

PEACH TREE, PAMPAIAN'S LATE BABCOCK

James H. Pampaian, 6489 S. Alta Ave., Reedley, Calif. 93654

Filed Feb. 17, 1984, Ser. No. 581,182

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—42 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its bearing of freestone fruit having white flesh and by its general resemblance to the Giant Babcock Peach Tree (U.S. Plant Pat. No. 1,353) from which it is distinguished by its bearing of fruit maturing approximately one month later than that of the Giant Babcock and having a distinctive suture having a dark red coloration radiating through the flesh in the suture plane toward the stone.

PATENTS

GRANTED NOV. 12, 1985

ERRATA

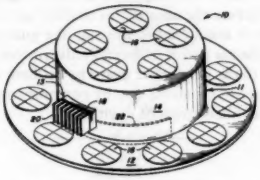
For CLASS	See PATENT NO.
623–014	4,551,862
623–023	4,551,863
623–006	4,551,864
226–142	4,552,294
226–180	4,552,295
303–007	4,552,398
556–009	4,552,700
514–002	4,552,764
514–513	4,552,765
429–081	4,552,823
455–007	4,552,839
524–219	4,552,926
264–507	4,553,212

PATENTS

GRANTED NOVEMBER 12, 1985

GENERAL AND MECHANICAL

4,551,857
HOT WEATHER HAT
Aaron A. Galvin, 15 Barberry Rd., Lexington, Mass. 02173
Filed Dec. 16, 1982, Ser. No. 450,562
Int. Cl.[4] A42B *1/24*
U.S. Cl. 2—7 **11 Claims**



1. Apparatus for cooling the forehead region of the cranium, comprising:

first means having photovoltaic surfaces operative in response to solar radiation to provide an electrical signal having nominal voltage and current characteristics;

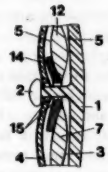
second means connected to said first means and operative in response to said electrical signal having said nominal voltage and current characteristics to provide a cold surface; and

third head piece means coupled to said first and said second means for removably mounting said first and said second means to the cranium;

thermally conductive metallic strip means mounted to said cold surface such that it is in physical contact with said forehead region of the cranium to provide effective thermal communication with the forehead region and cooling thereof when said third head piece means is mounted to the cranium.

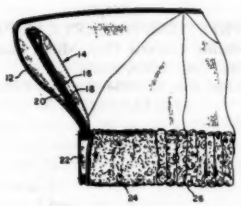
4,551,858
PROTECTIVE HELMET HAVING A COOLING HARNESS
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 30, 1984, Ser. No. 574,993
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302785
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—7 **7 Claims**

1. A protective helmet having cooling gear comprising an outer protective helmet shell and a head harness arranged within said shell comprising inner and outer lining walls formed as complimentary segments connected to each other adjacent the tops thereof, said segments being subdivided by longitudinal and transverse webs into mutually communicating cells, a coolant in said cells, a crossband additionally connecting said segments together extending around said helmet, said crossband and said lining having openings therein and a button



formation at the interior of said outer protective helmet engaged in the openings.

4,551,859
CAP
Gilbert C. Gerhardt, 225 Great Rd., Maple Shade, N.J. 08052
Filed Apr. 30, 1984, Ser. No. 605,162
Int. Cl.[4] A42D *1/06*
U.S. Cl. 2—172 **12 Claims**



1. A cap comprising a crown, a top, a headband having a width in the vertical direction and extending around said cap below said crown, and a pair of ear flaps each having a retracted condition and an extended condition, each ear flap being attached to and integral with said cap, each said ear flap including a relatively stiff layer, and the proximal end of each said ear flap being affixed to said cap adjacent to and parallel to said headband and making first contact with said headband at the upper edge of said width of said headband, across a substantial portion of the width of said headband, and along a substantial extent of said ear flap running from the proximal toward the distal end thereof, to cause said stiffening layer to tend to extend toward a straight line from said affixed portion to force said earflaps toward said retracted condition.

4,551,860

METAL MESH HEAD COVERING

Helen E. Smit, and Julie A. Smit, both of 1045 Hinman Ave., Evanston, Ill. 60202

Filed Mar. 1, 1982, Ser. No. 353,840
Int. Cl.[4] A42B *1/18*
U.S. Cl. 2—175 **1 Claim**

1. A process for making a single layer headcovering comprising the steps of:

a. molding a single piece of a mesh-type of open metal wire or plastic wire fabric material in the form of a desired seamless crown which is fully self-supporting, said crown having a size and a shape which fits around the perimeter of, rests lightly on and is fully supported on the wear's coiffure, whereby said crown does not squeeze a hair style, the crown enclosing and protecting a fluffy, curly hair style from becoming wind blown while ventilating a head to enable air to pass freely through the crown, said open fabric giving an unencumbered view of said hair style;

b. finishing the peripheral edges of said mesh-type material around the open edge of the crown in a hat band region of said crown, said finished edge closing raw ends of said wire fiber so that said mesh will not catch in a person's hair;

c. incorporating a brim or visor onto said crown at said hat band region of said hat band;

d. coloring the mesh-type material any color; and

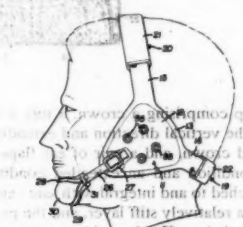
e. adding a hat band to completely surround and contain said molded mesh crown to preserve a fixed and non-varying periphery for said crown.

4,551,861

WRESTLING HELMET EAR PADS

John L. Marchello, Traverse City, Mich., assignor to Danmar Products, Inc., Ann Arbor, Mich.

Filed Jan. 16, 1984, Ser. No. 570,887
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—425 **6 Claims**



1. An ear pad for a helmet having an ear protective cup-like guard sized and shaped to overlay the wearer's ear and head portion around the ear, with the ear pad fastened within the cup and having a central, depressed, ear receiving pocket, with cushion-forming bulged strips around at least part of the periphery of the pocket for engaging areas of the wearer's head around the ear, the improvement comprising:

said ear pad being formed of a relatively thick, molded sheet of a resilient, rubber-like material, with the sheet having an inner surface adjacent the wearer's head and an outer surface adjacent the wall of the cup-like guard;

the center portion of the sheet forming a resilient ear receiving pocket, and the sheet portions at the periphery of the pocket being inwardly bulged to form peripheral strips of cavities that open towards said wall, with the peripheral edges of the strips shaped to directly engage against said wall, wherein the stips act as resilient air chambers when said pad is assembled to the cup-like guard;

whereby the ear pad absorbs and redistributes impact shocks applied to the helmet ear guard by resilient deformation of the rubber-like material and by compression and distortion of the air filled strips of cavities.

4,551,862

PROSTHETIC SPHINCTER

Terry M. Haber, 25011 Castlewood, Lake Forest, Calif. 92630

Filed Dec. 15, 1982, Ser. No. 435,761
Int. Cl.[4] A61F *1/00*
U.S. Cl. 623—14 **17 Claims**

1. A prosthetic sphincter suitable for implantantion for embracing an elimination passage of a patient to control the movement of material therethrough for realizing continence, said sphincter including, in combination:

(a) a stationary ring;

(b) a rotatable ring axially aligned with said stationary ring to define a ring assembly having an occlusion opening through the rings for surrounding the patient's elimination passage;

(c) occlusion spring means interconnecting said stationary ring and said rotatable ring such that rotation of said rotatable ring relative to said stationary ring from a first position causes said occlusion spring means to enter said occlusion opening to cause a closing of the occlusion opening around the elimination passage and a corresponding application of occlusive pressures to the elimination passage being surrounded by the rings to maintain the passage in an occluded condition until the rotatable ring is rotated back to its first position relative to the stationary ring; and

(d) a tear resistant skin for enclosing said ring assembly and occlusion spring means, said skin having fatigue relief folds on top and bottom surfaces thereof arranged coaxially with the occlusion opening through said rings for accommodating the closing of the occlusion opening when the rotatable ring is moved from its first position, said skin having a pliable filling material located within the enclosure formed thereby for encapsulating said ring assembly and said occlusion spring means.

4,551,863

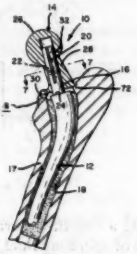
FEMORAL COMPONENT AND METHOD

William M. Murray, 145 Bryce Rd., Camp Hill, Pa. 17011

Continuation of Ser. No. 305,914, Sep. 28, 1981, abandoned. This application Feb. 4, 1985, Ser. No. 698,272

Int. Cl.[4] A61F *1/04*

U.S. Cl. 623—23 **13 Claims**



1. A femoral implant component comprising:

a. a stem element including an elongate cement stem adapted to be cemented into a prepared medullary canal at the proximal end of a live femur, and a shaft on the cement stem extending beyond the proximal end of the cement stem, the cement stem including a distal end to be positioned within the canal, a proximal end to be positioned adjacent the proximal end of the canal, and a cement contact surface surrounding the cement stem between the distal and proximal ends for forming a bond with bone cement in the canal; and

b. a head element mounted on the stem element including a spherical bone joint ball away from the cement stem, a neck on the side of the ball toward the cement stem, a bore extending into the end of the neck toward the ball, and a layer of porous bone ingrowth material on the surface of the neck to lie against resected surface of the femur, the shaft extending into the bore so that the end of the neck surrounds the shaft and is adjacent to the proximal end of the cement stem, the head and stem elements including anti-rotation means preventing rotation of the head element on the shaft;

c. whereby upon implantation of the component in a live femur with the cement stem secured in the medullary canal by a cement connection and the surface of the ingrowth material lying flush against a complementary live bone surface on the proximal end of the femur the cement forms an immediate strong anchorage joining the stem element to the femur and supporting the head element with respect to the complementary surface during growth of live bone into the ingrowth material to form a long term ingrowth anchorage at the head element.

4,551,864

ANTERIOR CHAMBER LENS

David S. Akhavi, Westwood, Calif., assignor to Iolab Corporation, Covina, Calif.

Filed Aug. 18, 1983, Ser. No. 524,276

Int. Cl.[4] A61F *1/16*

U.S. Cl. 623—6 **5 Claims**

1. An anterior chamber intraocular lens comprising:

an optic having an anterior surface, a posterior surface and a surrounding circumferential edge and having first and second bores entering at said edge of said optic at opposite peripheral portions of said edge, said bores extending substantially parallel to each other and extending into said optic generally parallel to the plane which is perpendicular to the optical axis of the optic;

first and second flexible, resilient filamentary haptic means extending from said optic for engaging the peripheral anatomy of the eye;

said first and second haptic means each having a first end and a second end;

said first end of said first haptic means fixed to said optic at a point spaced circumferentially from said first bore an arc distance therealong of less than 180 degrees;

said second end of said first haptic means extending into said first bore;

said first end of said second haptic means fixed to said optic at a point spaced circumferentially from said second bore an arc distance therealong of less than 180 degrees, said second end of said second haptic means extending into said second bore;

each of said first and second haptic means including

(a) a first leg extending from said first end outwardly of said optic;

(b) a second leg extending transversely of said optic for engaging the peripheral anatomy of the eye;

(c) a third leg extending from said second leg to said second end of said haptic means;

said first, second and third legs of each haptic forming a unitary haptic means and having smooth, connecting portions;

each of said first legs of said first and second haptic means including a concave portion extending back toward said respective third leg to provide a greater flexibility to each of said first and second haptic means;

each of said concave portions extending a distance toward said respective third leg so that a plane including the optical axis of said optic and intersecting said concave portion of said first haptic means will also intersect the concave portion of said second haptic means;

further including locking means cooperatively associated with each of said second ends of said first and second haptic means and the respective one of said first and second bores in said optic;

wherein a portion of said optic surrounding the entry area of each of said first and second bores extends thereinto to define a flange for reducing the size thereof in said entry area;

said second end of said first and second filamentary haptic means including an enlarged head larger than the respective first or second bores in said entry area but smaller than the remainder of the respective first or second bores so that said enlarged head may be forced past said flange into the remainder of said respective first or second bores to restrain the removal of said enlarged head of said second end from said respective first or second bores; and

wherein said enlarged head and said flange are sufficiently resilient to permit said enlarged head to contract as it is forced through said flange and then to expand once it passes said flange and enters the remainder of said respective first and second bores.

4,551,865

VENTILATOR FOR A LAVATORY PAN

Dudley G. Waters, 8/47 Victoria Terr., Caloundra Headland, Australia

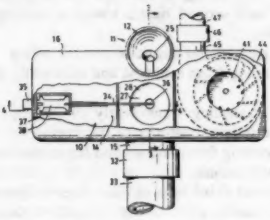
PCT No. PCT/AU84/00026, § 371 Date Oct. 29, 1984, § 102(e) Date Oct. 29, 1984, PCT Pub. No. WO84/03316, PCT Pub. Date Aug. 30, 1984

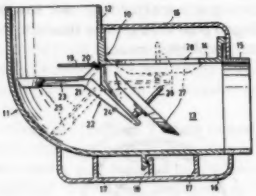
PCT Filed Feb. 24, 1984, Ser. No. 672,268

Claims priority, application New Zealand, Feb. 28, 1983, 203413

Int. Cl.[4] E03D *9/02*

U.S. Cl. 4—213 **6 Claims**





1. A ventilator for a lavatory pan including:

a duct for connecting the discharge pipe of a lavatory flushing assembly to the flush pipe of the lavatory pan,

an electric extractor fan, having an inlet and an outlet to atmosphere,

an air passage in the duct connected to the extractor fan inlet,

a valve for opening or closing the air passage,

initiating means for operating the extractor fan when the valve is in open position, and

terminating means operated by flow of water from the discharge pipe and duct for automatically closing the valve and stopping the extractor fan.

4,551,866

AUTOMATIC TOILET SEAT LOWERING APPARATUS

Walter G. Hibbs, 3145 Las Palmas, Houston, Tex. 77027

Filed Aug. 30, 1984, Ser. No. 646,366

Int. Cl.[4] A47K *13/10*

U.S. Cl. 4—251 **5 Claims**

1. Apparatus for automatically returning a hinged toilet seat to the lower substantially horizontal position after raising to an upper substantially vertical position after passage of a predetermined amount of time, including:

a cylinder;

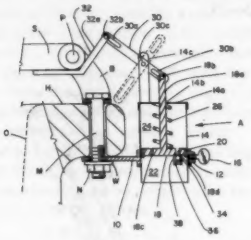
means for releasably securing said cylinder to a toilet bowl at a desired location;

a piston sealingly disposed in said cylinder for reciprocal movement therein, said piston forming a piston rod having a portion extending from said cylinder;

means for operably linking said portion of said piston rod extending from said cylinder to the hinged toilet seat for moving said toilet seat from the substantially vertical upper position to the lower substantially horizontal position;

biasing means disposed to end said cylinder for urging said piston to move in a direction for operably moving the toilet seat to the lower substantially horizontal position;

said cylinder filled with an operating fluid having preselected flow properties;



said piston having a first flow port formed therethrough to enable passage of operating fluid therethrough at a desired rate to control the speed of movement of said piston from moving the toilet seat to the lower substantially horizontal position.

4,551,867

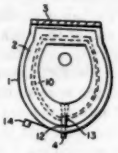
TOILET BOWL WHICH WASHES

Joseph Gurevich, and Alex Gurevich, both of 64-40 99 St., Forest Hills, N.Y. 11374

Filed Nov. 4, 1983, Ser. No. 549,207

Int. Cl.[4] A47K *4/00, 3/20*

U.S. Cl. 4—420.4 **14 Claims**



1. A toilet bowl unit, comprising

a bowl bounding an interior and having a main part with front and rear parts and an upper rim with an upper bowl opening;

a cover having a cover opening and turnable relative to said bowl between an extended position in which it rests on said rim of said bowl and a retracted position in which it is withdrawn from said rim of said bowl;

water supplying means extending into said interior of said bowl and having a water outlet element arranged in said interior;

said cover opening having a relatively small length in a horizontal plane so as to insure comfortable sitting of a user on said cover in its extended position for defecation and/or urination, without excessive sinking of the lower parts of the user's body into said bowl,

said rim of said bowl being considerably wider than said main part and having an inner surface provided with a bevel to insure comfortable sitting of the user directly on said rim in the retracted position of said cover, for washing the lower parts of the user's body,

said bowl opening being considerably longer in the horizontal plane that said cover opening so that when the user sits directly on said rim for washing a sufficient space remains in said front part of said bowl for introducing the user's hand through said bowl opening into the interior of said

bowl in said front part to reach by the user's hand the lower parts of the body and said water outlet element,

said water supplying means having said water outlet element hingedly arranged in said front part of said bowl so as to issue water onto the lower parts of the user's body and also to enable the user to change the direction of a water stream issuing from said water outlet element so as to direct the water stream onto and successively wash the respective lower parts; and

a foot pedal located outside of said bowl in the region of said front part so as to be reachable by a user's foot while sitting on said rim and arranged to adjust under the action of the user's foot the quantity of water issuing from said water outlet element onto the lower parts of the user's body.

4,551,868

WASHING DEVICE FOR PARTS OF BODY

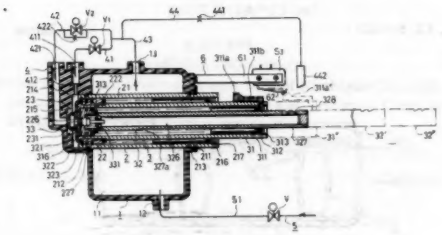
Shinji Kawai, Toyota; Yuji Yamaguchi, Anjo; Koichi Suzuki, Chiryu, and Hisanobu Takeda, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 6, 1983, Ser. No. 539,751

Claims priority, application Japan, Oct. 6, 1982, 57-175589

Int. Cl.⁴ A61H *35/00*

U.S. Cl. 4—443 **3 Claims**



1. In a washing device for parts of body which comprises:

(1) first cylinder means comprising a first cylinder and a first piston to be operated in the front end direction thereof by introducing pressurized water into said first cylinder;

(2) second cylinder means comprising a second cylinder integrally connected to said first piston and a second piston to be operated in the front end direction thereof by introducing pressurized water into said second cylinder,

said second piston being provided with at least one nozzle at the front end thereof to jet or spout pressurized water for washing parts of the body from a cylinder chamber formed in the second piston;

(3) pressurized water control means for selectively supplying pressurized water to both of said first and second cylinders, or to any one of them; and

(4) pressurized water supply means for supplying pressurized water to said pressurized water control means; the improvement wherein:

said second cylinder means is telescopically disposed within said first cylinder means; and

said pressurized water supply means comprises:

(a) means for selectively causing said pressurized water control means to supply pressurized water to said second cylinder means to extend said nozzle of said second piston to a first washing position;

(b) means for selectively causing said pressurized water control means to supply pressurized water to both of said first and second cylinder means to extend said nozzle of said second piston to a second washing position;

(c) sensor means for detecting extension of one of said first and second cylinders to a given position; and

(d) means responsive to said sensor means for reducing said water supply to said first and second cylinder means upon said detection of said extension.

4,551,869

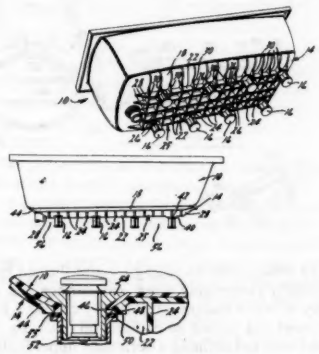
FLOOR SUPPORT FOR A BATHTUB

Thomas H. Whitney, Attica, Mich., assignor to Trayco Inc., Lapeer, Mich.

Filed Mar. 20, 1984, Ser. No. 591,469

Int. Cl.⁴ A47K *3/00, 3/16, 3/02, 3/022*

U.S. Cl. 4—592 **8 Claims**



1. A base support for a plastic bathtub comprising:

a panel section with a top contoured surface shaped to abut the underside of a plastic bathtub;

a first set of substantially parallel ribs integrally formed with said panel section and depending downwardly therefrom;

a second set of substantially parallel ribs integrally formed with said panel section and depending downwardly therefrom;

said second set intersecting said first set at a plurality of intersections; and

a plurality of said intersections having an annular cylindrical wall defining a respective recess therein for receiving a respective support leg.

4,551,870

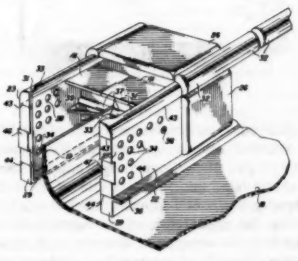
SHOWER STALL THRESHOLD

Francis A. Presti, Jr., 1537 E. Frost, Mesa, Ariz. 85203

Filed Jan. 18, 1985, Ser. No. 692,511

Int. Cl.⁴ A47K *3/22*

U.S. Cl. 4—613 **12 Claims**



1. A shower stall threshold structure comprising oppositely-disposed upright former sections extending longitudinally of

the threshold, means for holding the sections in fixed spatial relationship, a quantity of mortar substantially filling the space between said former sections and tiles covering the top and side face of the threshold, said former sections having openings therein permitting said mortar to extend therethrough for contact with said tiles.

4,551,871

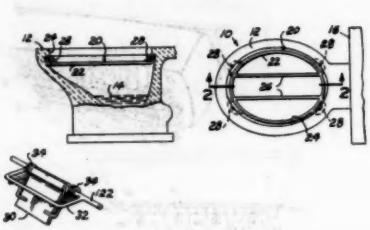
INFANT PROTECTING COMMODE INSERT

Jerry D. West, 702 E. 19, Stillwater, Okla. 74074, and Wayne W. Vinson, 919 N. West, Stillwater, Okla. 74075

Filed Mar. 12, 1985, Ser. No. 710,885

Int. Cl.[4] A47K *17/00*

U.S. Cl. 4—661 **6 Claims**



1. In a water closet including a water flushed bowl having a downwardly converging inner wall surface and containing a quantity of water therein for normally closing a bottom outlet of the bowl and having an endless rim inwardly overhanging the bowl wall and defining a horizontal upper limit of the bowl spaced above the water therein, the improvement comprising:

grate means contained by the bowl adjacent its upper limit; and,

resilient members secured to said grate and bearing against the inner wall surfaces of said bowl for normally preventing removal of the grate means.

4,551,872

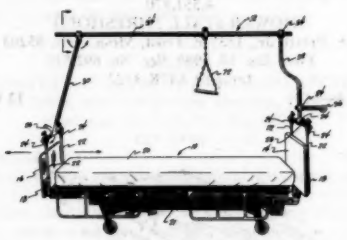
ORTHOPEDIC TRACTION FRAME

Albert D. Reed, Greenwood, S.C., assignor to Professional Medical Products, Inc., Greenwood, S.C.

Filed Feb. 6, 1984, Ser. No. 577,563

Int. Cl.[4] A61H *1/02;* **F16M** *13/00*

U.S. Cl. 5—445 **4 Claims**



1. In an orthopedic traction frame for an adjustable hospital bed having relatively movable head and foot portions, said frame including a pair of elongate upright support members for attachment to the head and foot portions of the bed, respectively, a generally horizontal support member attached to and interconnecting the upper ends of the upright members for supporting orthopedic equipment thereon, and means for attaching the opposite ends of the upright member at the foot of the bed to the foot of the bed and to the horizontal support member, respectively, for pivotal movement of the ends about respective axes extending perpendicular to the length of the bed to permit variable positioning of the head and foot of the bed toward and away from each other; the improvement wherein said attaching means includes adjustable clamp means for pivotal attachment of the upper end of the upright member at the foot of the bed to the horizontal member, said clamp means including a releasable clamping portion for surroundingly engaging the horizontal member to permit its adjustable positioning along the length of the horizontal member, a base portion for fixed attachment to the upper end of the upright member at the foot of the bed, and means pivotally interconnecting the clamp portion and the base portion for relative movement of the same about an axis perpendicular to the length of the bed to permit relative movement of the head and foot portions of the bed and adjustable positioning of the clamp means along the length of the horizontal member to optimize strength and load support by the frame in various positions of the head and foot of the bed.

4,551,873

WATERBED MATTRESS WITH A BAFFLE

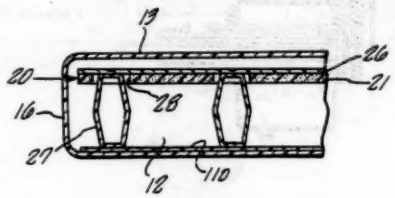
Charles P. Hall, Muir Beach, Calif., assignor to Monterey Manufacturing Co., Carson, Calif.

Continuation of Ser. No. 95,214, Nov. 19, 1979, Pat. No. 4,345,348, which is a continuation-in-part of Ser. No. 949,963, Oct. 10, 1978, Pat. No. 4,247,962. This application Jul. 13, 1982, Ser. No. 397,795

The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.

Int. Cl.[4] A47C *27/08*

U.S. Cl. 5—450 **35 Claims**



1. An improved waterbed mattress of a type having a flexible water-filled bladder in which said bladder has a recloseable opening for adding and removing water and air from said bladder wherein the improvement comprises:

(a) at least one buoyant, flexible, foam, horizontal plate member, located inside said bladder and unattached to any surface of said bladder;

(b) appendages depending from the lower surface of said horizontal member, wherein said appendages have vertically inclined faces extending to a depth of at least half the distance to the bottom wall of said bladder; and

(c) attachment means for attaching said appendages to said horizontal member.

4,551,874

PNEUMATIC MASSAGE MAT

Mitsuma Matsumura; Tadahisa Mogaki, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,388

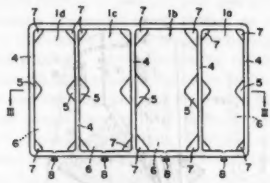
Int. Cl.[4] A61H *9/00;* **A61G** *7/04*

U.S. Cl. 5—453 **3 Claims**

1. A pneumatic massage mat comprising:

a plurality of elongated air chambers which are juxtaposed such that, upon being expanded and contracted in given sequence by sequentially feeding and bleeding air under pressure into and out of the respective chambers, said massage mat imparts a massaging action to the body of the user,

wherein the air space of each said air chamber is narrowed in width at a substantially central portion and at opposed end portions thereof with respect to the longitudinal extent of the chamber such that these narrow portions are filled with a smaller volume of air than the remaining portions, and



wherein the central narrowed portions of the juxtaposed air chambers extend along substantially a straight line and along the spine of the user.

4,551,875

COMBINATION TOOL

Stephen Getz, and William Fouser, both of Michigan City, Ind., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,949
Int. Cl.⁴ B25F *3/00*
U.S. Cl. 7—138 **3 Claims**

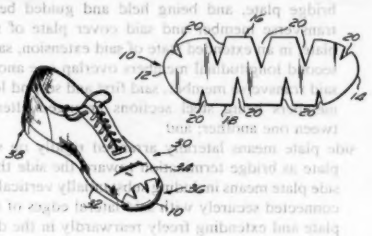
1. A combination tool for selectively exposing a power-driven bit member at one axial end of the tool or a socket member at the one axial end of the tool, comprising a shaft bearing said bit member at its free end and a tube bearing said socket member at the free end thereof, said tube telescopically coupled to the shaft for rotation therewith on the driving of said shaft with either of said members exposed, the invention wherein said tube has a socket member with a configured central opening at the free end thereof and an internally segmented collar at the other end of the tube, a cylindrical bore in the tube between the ends thereof, said shaft being generally cylindrical with an axially elongated segmental flat keywall extending from adjacent the driven end of the shaft to a shoulder adjacent to and spaced from the bit end of the shaft, said shaft keywall shaped to mate with the segmented collar in a planar mating to engage the tube to the shaft for rotation therewith with the bit end of said shaft extending past the one end of the tube, a second flat keywall on said shaft adjacent said shoulder and terminating at a second shoulder spaced from said first mentioned flat keywall, said second keywall positioned on said shaft to mate with the segment of said collar in an advanced position with the free end of the tube advanced axially along the shaft and in which the mating of the second keywall to said collar engages the shaft to the collar for mutual rotation, and in which said second shoulder is positioned to abut against said collar to maintain the tube in said advanced position.

4,551,876

SHOE PATCH DEVICE AND METHOD OF PRESERVING AND REPAIRING SHOES

Dale R. Leslie, 2531 Crestview Dr., Newport Beach, Calif. 92663

Continuation of Ser. No. 445,238, Nov. 29, 1982, abandoned.
This application Oct. 5, 1984, Ser. No. 658,421
Int. Cl.⁴ A43B *13/22, 13/12*
U.S. Cl. 12—142 Q **5 Claims**



1. A method for preserving an unworn sport shoe without impairing the flexibility thereof, comprising the steps of:

designating any localized area on the sides or upper portion of said unworn sport shoe subject to excessive wear;

selecting a thin generally planar patch member having notched edges and fabricated of sufficiently flexible, wear resistant material which conforms exactly to the shape of said localized area in a size sufficient to extend over said localized area of said unworn sport shoe;

applying an adhesive to one side of said patch member and to said localized area; and

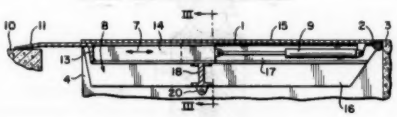
pressing said one side of said patch member onto said localized area to conform the patch member to the shape of the localized area and to affix said patch member in a generally contiguous orientation to said unworn sport shoe to protect said localized area against wear without impairing the original playing characteristics, flexibility, and, construction of said unworn sport shoe.

4,551,877

RAMP BRIDGING DEVICE

Kurt Alten, Ringstr. 14, 3015 Wennigsen, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,256
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221133
Int. Cl.⁴ E01D *1/00*
U.S. Cl. 14—71.7 **7 Claims**



1. A ramp bridging device, comprising:

a bridge plate having a front end and a back end, with said back end being pivotably mounted to a ramp about a horizontal axis; said bridge plate including a continuous cover plate and having longitudinal lateral edges;

first longitudinal members arranged below said cover plate and disposed parallel to one another;

an extension associated with said front end of said bridge plate and adapted to rest, during operation, on a platform which is to be loaded or unloaded; said extension being extendable and retractable necessarily by shifting back and forth relative to said bridge plate, with movement of said extension being effected in the longitudinal direction of said device; said extension including a portion which extends substantially over the width of said device, said

portion, during operation, effecting said resting of said extension on said plateform;

a transverse member having two opposite ends which are rigidly associated with said lateral edges of said bridge plate;

second longitudinal members associated with said extension, said second longitudinal members extending freely from said portion of said extension toward said back end of said bridge plate, and being held and guided between said transverse member and said cover plate of said bridge plate; in an extended state of said extension, said first and second longitudinal members overlap one another above said transverse member, said first and second longitudinal members being steel sections arranged alternately between one another; and

side plate means laterally arranged rigidly on said bridge plate as bridge termination toward the side thereof, said side plate means including substantially vertical side plates connected securely with said lateral edges of said bridge plate and extending freely rearwardly in the direction of said transverse member; said ends of said transverse member being connected with said side plates which extend freely toward the rear as well as being arranged to extend between said cover plate and said transverse member which is rigidly connected with a bridge lateral edge respectively due to fastening via said side plate means which terminate the bridge toward the side and which also serve as support carriers therewith.

4,551,878

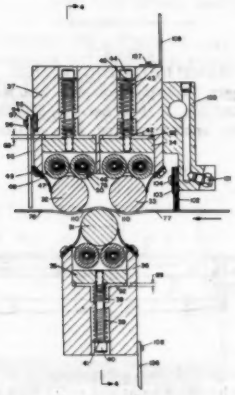
STRIP WIPING SYSTEM

John W. Turley, 14 Pine St., Oxford, Conn. 06483, and Michael G. Sendzimir, E. Hill Rd., Woodbury, Conn. 06798

Filed Dec. 3, 1984, Ser. No. 677,491

Int. Cl.[4] B21B *45/02*

U.S. Cl. 15—102 **3 Claims**



1. A three-roller device for wiping liquids from the surface of metal strip under tension, consisting of three rollers mounted with their axes parallel to the plane of the strip and to each other, and perpendicular to the direction of strip travel, the first two of said rollers being urged against one surface of the strip, the third roller being urged against the other surface of the strip, and each roller is urged by a plurality of pairs of caster bearings, said caster bearings being mounted in carriers which are spring mounted to a rigid frame, said frame being urged towards the strip by means of cylinders powered by fluid under pressure.

4,551,879

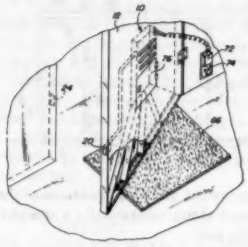
ENTRANCE DUST ARRESTER

Isaac Ray, 3700 Bedford Ave., Brooklyn, N.Y. 11229

Filed Oct. 15, 1984, Ser. No. 661,128

Int. Cl.[4] A47L *5/38*

U.S. Cl. 15—301 **9 Claims**



1. An entrance dust arrester, comprising in combination:

(a) a pneumatic vacuum source; and,

(b) a housing communicating with said vacuum source which directs the application of said vacuum in a downward direction such that said vacuum is applied along a downward facing planar surface via at least one aperture, said housing being attached to an entrance door to move therewith, such that said housing sweeps an arc over a flooring surface to which said downward facing planar surface is in close proximity when said door is rotated upon its hinges, thereby vacuuming said arc of said flooring.

4,551,880

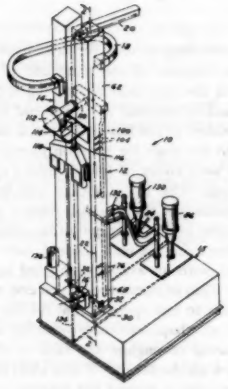
VERTICAL WORKPIECE CLEANSER AND DRYER

Gerald E. Johnson, Flint, Mich., assignor to Lamb Technicon Corp., Warren, Mich.

Filed Oct. 20, 1983, Ser. No. 543,629

Int. Cl.[4] A47L *5/14*

U.S. Cl. 15—302 **12 Claims**



1. A vertical workpiece cleanser and dryer comprising a closed walled tower,

an elevator including a plurality of pockets, means for translating said pockets through a closed path within said tower, which path includes at least one portion in which said pockets are translated vertically upwardly, and means for feeding workpieces to be cleansed into said tower to successive ones of said pockets upstream of said one portion,

a first plurality of jets spaced from each other along a lower section of said one path portion within said tower and means for directing a cleansing solution through said first plurality of jets onto workpieces carried in said pockets through said lower path section, and

a second plurality of jets spaced from each other along an upper section of said one path portion within said tower directly above said lower section, an air pump connected for directing air under pressure through said second plurality of jets onto workpieces carried in said pockets through said upper path section, air inlet means connected to and opening into said tower at a position spaced from and communicating with said one path portion so as to effect closed circulation of drying air from said second plurality of jets to said inlet means through said tower,

such that cleansing solution removed from the workpieces by said second plurality of jets in said upper path section, and cleansing solution in said lower path section, fall by gravity through said lower section around said pockets and parts in said lower path section thereby flush-cleansing workpieces in said lower path section,

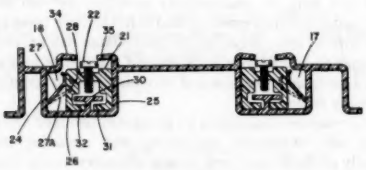
said inlet means being positioned and directed on said tower so as to promote downward flow of drying air from said jets through said lower path section so as to enhance downward flow of cleansing solution in said upper and lower sections.

4,551,881

FRICTION BRAKE FOR A VERTICAL SLIDING WINDOW

Michael K. Hoffman, Cannon Falls, Minn., assignor to Plastic Profiles, Inc., Cannon Falls, Minn.

Filed Apr. 23, 1984, Ser. No. 602,896
Int. Cl.[4] E05D *13/12*
U.S. Cl. 16—199 **17 Claims**



1. For braking a vertically sliding window:

a window jamb liner attached to a vertical side jamb of a window casing, said jamb liner having an elongated "U" shaped channel defined by a channel opening, a side wall located opposite the channel opening and parallel front and back end walls;

a block member slidably engaged in said jamb liner channel;

an elongated resilient wing member unitarily formed with an end wall and extending into the channel along the entire length of the channel from the end wall for contacing said block member and urging said block member toward the other end wall for continuously providing a frictional braking force on said block member while said block member is in said channel; and

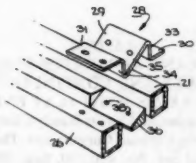
means on said block member for releasably engaging a window sash.

4,551,882

SCALE OF FLAT CONSTRUCTION

Burt L. Swersey, and Peter I. Fried, both of Scarsdale, N.Y., assignors to COBE ASDT, Inc., Lakewood, Colo.

Division of Ser. No. 374,177, May 3, 1982, , which is a continuation-in-part of Ser. No. 259,942, May 4, 1981, abandoned. This application May 8, 1984, Ser. No. 608,205
Int. Cl.[4] E05D *7/06*
U.S. Cl. 16—226 **6 Claims**



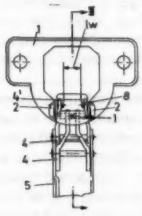
1. A flexure for securing one element to a second element in relatively movable relations, said flexure having an elongated body of Z-shaped cross-section, a first flange extending from one end of said body for securement to one element and a second flange extending from an opposite end of said body in an opposite direction from said first flange for securement to the second element.

4,551,883

FURNITURE HINGE INCLUDING AXLE MEMBERS MOUNTING HINGE LINKS TO HINGE CASING

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Mar. 6, 1984, Ser. No. 586,765
Claims priority, application Austria, Mar. 21, 1983, 976/83; Dec. 19, 1983, 4416/83; Dec. 19, 1983, 4417/83
Int. Cl.[4] E05D *3/06*
U.S. Cl. 16—370 **10 Claims**



1. A furniture hinge comprising:

a hinge arm to be mounted on a furniture body;

a hinge casing to be fitted to a furniture door;

inner and outer hinge links having first ends pivoted to said hinge arm and second ends pivoted to said hinge casing; and

means pivotally mounting said second end of said outer hinge link to said hinge casing, said mounting means comprising first and second axle members, each said axle member including first and second pivot pins extending parallel to each other and joined by a transversely extending connecting element, said first pivot pins being shorter than said second pivot pins, said first and second axle members positioned as mirror images of each other with said pivot pins extending through spaced walls of said hinge casing into the interior thereof, with said first pivot pins directed toward each other along substantially the same axis with a space therebetween, and with said second pivot pins directed toward each other along substantially

the same axis, said second end of said outer hinge link being pivotally mounted on said first pivot pins, and a holding sleeve fixedly positioned in said interior of said hinge casing, said second pivot pins extending into said sleeve.

4,551,884

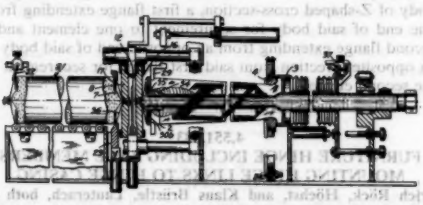
METHOD AND APPARATUS FOR USE IN AUTOMATICALLY AND CONTINUOUSLY MAKING SAUSAGES WITH FLAT ENDS

Vytautas Kupcikevicius, and Vytas Raudys, both of Chicago, Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 430,230, Sep. 30, 1982,. This application Nov. 29, 1984, Ser. No. 675,478

Int. Cl.[4] A22C *11/00*

U.S. Cl. 17—49 28 Claims



1. A method for automatically and continuously producing encased food product having a substantially uniform diameter and substantially flat ends which comprises:

(a) mounting a shirred tubular casing and a plurality of flattening annular disks each with a central hole onto a stuffing horn of a food stuffing apparatus, said shirred casing having a closeable unshirred portion extending over the discharge end of said stuffing horn, said stuffing horn extending through said disk central holes and said disks being disposed inside said closeable unshirred portion of said shirred tubular casing;

(b) positioning a first leading flattening disk and a second trailing flattening annular disk of said plurality within the unshirred portion portion of said casing and proximate to the discharge end of said stuffing horn such that the flattening portions of said first and second disks are essentially perpendicular to the longitudinal axis of said stuffing horn;

(c) discharging a pressurized food product from the discharge end of said stuffing horn between said first and second disks in an amount sufficient to move said first leading disk away from said stuffing horn and form an encased food length between said first and second disks;

(d) moving said second disk off said stuffing horn, and gathering and closing an unshirred portion of said casing between the annular second disk and the stuffing horn discharge end to provide a fully closed encased food product having substantially flat ends;

(e) positioning a succeeding pair of said annular flattening disks proximate to the discharge end of said stuffing horn such that the flattening portion of each disk of said succeeding pair of said disks is essentially perpendicular to the longitudinal axis of said stuffing horn, and severing the fully closed encased food product from the casing remaining on the stuffing horn; and

(f) repeating steps (c) through (e) using said succeeding pair of disks instead of said first and second disks to form another encased food length.

4,551,885

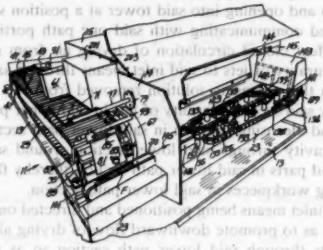
FISH DECAPITATOR AND EVISCERATOR

Robert Molnar, Windsor, Canada, assignor to Simnar, Inc., Windsor, Canada

Filed Mar. 21, 1983, Ser. No. 477,101

Int. Cl.[4] A22C *25/14*

U.S. Cl. 17—59 7 Claims



1. In a fish decapitator having a framework including a base, a power driven horizontally disposed continuous conveyor belt mounted upon said framework including a series of flexibly connected open ended containers extending transversely of said belt, each container adapted to receive and transport a fish, an elongated adjustable stop upon said framework spaced from said containers and parallel to said belt, a power rotated brush overlying said belt and mounted upon said framework and rotatable in a plane at right angles to the length of said belt, the brush bristles on rotation frictionally engaging each fish thereunder during feeding of said belt laterally advancing each fish outwardly of its container successively to said stop, and a power rotated knife mounted upon said framework for rotation in a plane parallel to and spaced from said stop laterally outward of said belt, for successively severing the fish heads during longitudinal movement of said belt, each fish lying upon one side with its belly forward, the decapitated fish moving in its container to and downwardly around the end of said conveyor in a horizontal position and dropping from its container with its belly down;

the improvement comprising an elongated fish feed channel upon said framework underlying and extending transversely of the forward end of said belt successively receiving said fish as they drop from said belt guidably retaining each fish horizontally with its belly side down;

a continuous power operated feed sprocket chain centrally underlying said channel along its length for supporting and advancing said fish successively in a line within said channel in a transverse path;

a pair of opposed horizontal coplanar flexible laterally yieldable fish feeder means mounted upon said framework adjacent one end of said channel longitudinally thereof for successively receiving each fish therebetween frictionally and operatively engaging its opposite sides and advancing said fish longitudinally;

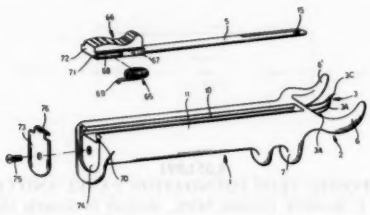
and a power rotated cutter disc journaled upon said framework and arranged in a vertical plane centrally underlying said feeder means and operatively engaging and slitting each fish on its belly side along its length as it is advanced longitudinally over said cutter disc.

4,551,886

OYSTER-OPENING TOOL

Léon Couche, 25 c, rue du Pommerot, 25150 Pond De Roide; Daniel Lacourt, 41, allée de la libération, 57100 Thionville, and Roger Ventavoli, 17, rue de Gaulle, 57440 Algrange, all of France

Filed May 24, 1983, Ser. No. 497,641
Int. Cl.[4] A22C *29/04*
U.S. Cl. 17—75 **8 Claims**



1. An oyster-opening utensil which comprises:

a utensil body formed with an elongated utensil handle;

a pointed and tapered rigid valve-separating tongue projecting from one end of said handle and engageable in a hinge portion of an oyster to spread the valves thereof apart, said tongue being curved in a longitudinal plane of said handle and said tongue whereby said tongue can be rocked on one of said valves after insertion through said hinge portion to lift the other valve relative to said one valve;

an elongated blade slidably mounted in said handle for movement rectilinearly parallel to said plane and a longitudinal dimension of said handle and displaceable to extend from said end thereof rectilinearly along a side of said tongue toward which said tongue is curved to sever a muscle interconnecting said valves; and

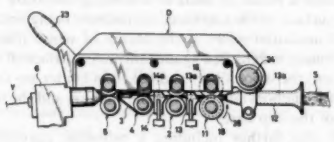
spring means in said handle for retracting said blade into said handle.

4,551,887

DRAFT APPARATUS FOR A SPINNING MACHINE

Ikuzo Uematsu, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 16, 1984, Ser. No. 580,878
Claims priority, application Japan, Feb. 21, 1983, 58-28270
Int. Cl.[4] D01H *5/72*
U.S. Cl. 19—244 **14 Claims**



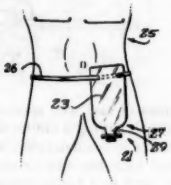
1. A draft apparatus wherein a plurality of pairs of rollers for sandwiching a sliver under pressure therebetween to feed the same for drafting are arranged along a feed path of the sliver such that they have gradually increasing circumferential speeds in the direction of sliver advancement and at least one pair of sliver compressing members disposed on the sliver path upstream of the drafting action, one of said sliver compressing members in the pair having a circumferential recessed groove for receiving the sliver therein while the other of said sliver compressed members in the pair has a circumferential rib disposed in said recessed groove and configured to press against the sliver received in said recessed groove without causing substantial widthwise sliver expansion, and at least one of said sliver compressing members in the pair being rotatable.

4,551,888

BAG SHUT-OFF CLAMP

William H. Beecher, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 23, 1983, Ser. No. 535,121
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—30.5 P **5 Claims**



1. A closure device comprising: first and second resilient curved legs connected to one another by an integrally formed hinge, said legs each having a first radius of curvature when said device is in an open position, said legs having a second radius of curvature not equal to said first radius of curvature when said device is in a closed position, said legs having substantially continuously intermeshing clamping surfaces, said legs having generally final radii of curvature in a closed position, said final radii of curvature having a finite value, said device having low-profile fastening means, said means comprising a single finger on at least one end of one of said legs and a pair of shoulders on at least one end of the other of said legs, said shoulders forming a slot dimensioned to snappingly engage said finger and hold said legs in clamping registration, said hinge having reinforcing means comprised of an arcuate prong located on one of said legs and a complimentary slot on the other of said legs, said prong and said slot adapted to engage one another upon closing of said device to prevent sudden failure of said hinge during use, each respective one of said first and second legs is arcuate, said first leg having a concave curvature and said second leg having a convex curvature respectively relative to said surfaces thereof, said first leg having a first radius of curvature, said second leg having a second radius of curvature, said first radius of curvature being relatively greater than said second radius of curvature; and wherein the resiliency of said closure device is such that said first and second legs are urgeable together substantially along said length of said surfaces by normal adult hand pressure thereby causing flexure of said first and second legs together, whereby said first and second legs are both thereby caused to assume a third radius, said third radius of curvature for said second leg having convex curvature along said surface thereof and being greater than said second radius of curvature, said third radius of curvature for said first leg having concave curvature along said surface thereof and being less than said first radius of curvature, said first and second legs when caused to assume said third radius of curvature being biasly urged together substantially continuously along the length of said surfaces thereof.

4,551,889

LOW FRICTION SELF-LOCKING ADJUST TONGUE

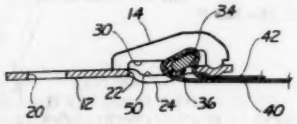
Surendra D. Narayan, and Rudy V. Thomas, both of Sterling Heights, Mich., assignors to Allied Corporation

Filed Nov. 21, 1984, Ser. No. 673,819
Int. Cl.[4] A44B *11/06*
U.S. Cl. 24—196 **22 Claims**

1. In a safety restraint system having a length of seat belt webbing connected between an anchor point and a seat belt

buckle, a self-locking adjust tongue adapted to connect the length of seat belt to the buckle comprising:

a generally planar tongue plate having at its forward end a tongue portion adapted to be received and locked in the buckle, a centrally disposed web aperture for receiving a loop of the seat belt webbing therethrough, a pair of depressed guide lands provided on the opposite sides of said web aperture forming a lock bar well intermediate the extremities of said web aperture and a pair of upstanding flanges each having a cutout adjacent to said guide lands, said cutouts in conjunction with said guide lands forming a bi-level lock bar slot extending rearwardly from said lock bar well to a higher level; and



a transverse lock bar having its ends guided in said lock bar slot and passing through the loop of seat belt webbing received through said web aperture.

4,551,890

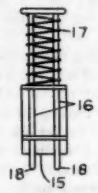
TWIN HOOKED CLAMP FASTENING DEVICE

Walter L. Larsen, P.O. Box 18302, Seattle, Wash. 98118

Division of Ser. No. 28,850, Apr. 10, 1979. This application Apr. 29, 1982, Ser. No. 373,121

Int. Cl.[4] A43C *11/08*; A44B *13/00*

U.S. Cl. 24—565 **25 Claims**



1. A twin hooked clamp fastening device, said fastening device comprising two distinct fastening members, a relative movement connecting structure to which each of the fastening members are connected for providing for limited relative movement between the two fastening members, and a resilient closing member interposed between the two fastening members, one fastening member having a pair of coacting complementary fastening device hooks arranged in a substantially parallel, spaced-apart orientation, the other fastening member having an opposing clamping member which includes a contacting element, wherein the position and orientation of the two fastening members with respect to each other and to the relative movement connecting structure is such that the contacting element on the opposing clamping member is movable relatively away from and toward the hooked part of the two fastening device hooks with the two fastening device hooks consequently being openable and closable with respect to the contacting element on the opposing clamping member, wherein the contacting element is shaped and positioned for bearing down on, and clamping to, the closest linear member and the pair of coacting fastening device hooks is shaped and positioned for straddling and reaching past the closest linear member and hooking to the second linear member and pulling the second linear member inward and against the closest linear member in opposition to the clamping action of the contacting element, and wherein the resilient closing member is so interposed between the two fastening members that it generally urges relative movement of the two fastening members with respect to each other in the direction of closing the fastening device hooks on the contacting element of the opposing clamping member, whereby the fastening device is adapted to be installed on the two crossing generally linear members so as to clampingly and frictionally fasten them together.

4,551,891

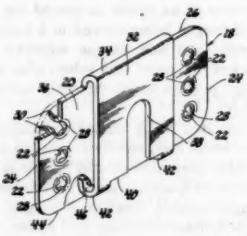
COMPOSITE TRIM FOUNDATION PANEL AND CLIP

Walter P. Kornylo, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1984, Ser. No. 578,123

Int. Cl.[4] A44B *21/00*

U.S. Cl. 24—669 **1 Claim**



1. A one piece clip for securement to a trim foundation panel during formation of the panel from a densified batten of wood fibers and resin binder,

the clip including a planar base of generally rectangular shape having an inner surface against which the batten of wood fibers and resin binder is densified to adhesively bond the outer surface of the panel to the inner surface of the clip base, the clip further including an outer surface and a plurality of spaced openings adjacent the transverse edges thereof, the material of the openings being formed into a series of anchors extending inwardly of the inner surface of the clip base, the anchors being anchored in the foundation panel as the batten of wood fibers and resin binder is densified against the inner surface of the clip base and the wood fibers and the resin binder are forced within the anchors and between the anchors and the inner surface of the clip base,

the clip further including a retention portion located in spaced overlying relationship to the outer surface of the clip base and having one edge portion thereof integrally secured to one longitudinal edge portion of the clip base,

the retention portion including a free edge portion adjacent the other longitudinal edge portion of the clip base and provided with generally U-shaped return bent tabs loosely receiving such other longitudinal edge portion of the clip base, the return bent tabs being forced against the inner surface of the clip base during the densification of the batten, the retention portion further including a slot opening to the free edge portion thereof for receiving the shank of a headed stud to trap the head of the stud between the retention portion and the outer surface of the clip base.

4,551,892

METHODS FOR PREPARING WARP KNITTED FABRICS

Shantilal G. Patel, Clifton, N.J., and William D. Bell, Warwick, N.Y., assignors to International Playtex, Inc., Stamford, Conn.

Continuation of Ser. No. 577,187, Feb. 6, 1984, abandoned, which is a division of Ser. No. 316,799, Oct. 30, 1981, Pat. No. 4,487,040. This application Mar. 29, 1985, Ser. No. 717,591

Int. Cl.[4] D04B *21/00*

U.S. Cl. 28—166 **4 Claims**

1. A method of preparing a knitted fabric capable of being molded into a garment having improved hand, said method comprising the steps of:

(a) spinning synthetic stable fibers having a denier of less than 2, a staple length in a range of about 1.5 to about 2 inches, and having a size no coarser than 60 single spun count into spun yarn;

(b) twisting said yarn in a range of 24 to 36 twists per inch;

(c) waxing and steaming said yarn;

(d) warping said yarn in an environment having a humidity in a range of 65% to 70% and having a temperature in a range of 70° to 72° Fahrenheit; and

(e) knitting said warped yarn on a 28 guage tricot warp knitting machine.

3. A method of preparing a knitted fabric capable of being molded into a garment having improved hand, said method comprising the steps of:

(a) spinning synthetic stable fibers having a denier of less than 2, a staple length in a range of about 1.5 to about 2 inches, and having a size no coarser than 50 single spun count into spun yarn;

(b) twisting said yarn in a range of 24 to 36 twists per inch;

(c) waxing and steaming said yarn;

(d) warping said yarn in an environment having a humidity in a range of 65% to 70% and having a temperature in a range of 70° to 72° Fahrenheit; and

(e) knitting said warped yarn on a Raschel warp knitting machine.

4,551,893

WIRE PROCESSING APPARATUS

Yuuji Ikeda, Imajuku; Hiroo Abe, Sangenjaya; Tadashi Osaka, Yokosuka, and Katsumi Komuro, Toyoma, all of Japan, assignors to AMP Incorporated, Harrisburg, Pa.

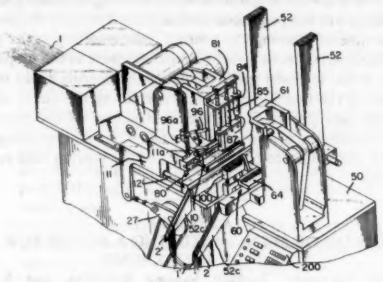
Filed Jun. 25, 1984, Ser. No. 624,435

Claims priority, application Japan, Jul. 5, 1983, 58-120971

Int. Cl.[4] H01R *43/04*

U.S. Cl. 29—33 M **8 Claims**

1. Wire processing apparatus comprising a base, first and second stations arranged in spaced relationship on the base, a wire delivery shuttle for conveying a plurality of wires in juxtaposed relationship along a wire feed path, through the second station to the first station, means for then securing the wires at the first station, means for driving the shuttle in reciprocating motion along said path to deliver the wires to said stations, means for feeding wires from a wire source for delivery by the shuttle and wire lengthening means disposed upstream of the second station and being actuable to advance the wires longitudinally thereof relative to the shuttle when the wires have been secured at the first station and the shuttle has been retracted from the first station, so that the wires form loops of different lengths between the first and the second stations; wherein wire tensioning rollers comprising a first set of idle rollers and a second set of driven rollers disposed opposite thereto which can be closed about the wires to drive them are disposed downstream of the second station, for paying out the wires as they are advanced by the wire lengthening means



so as to tension the wires between the wire tensioning rollers and the wire lengthening means.

4,551,894

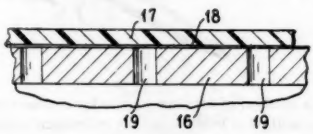
URETHANE COVERED PAPER MACHINE ROLL WITH VENTED INTERFACE BETWEEN ROLL AND COVER

Albert W. Beucker, Factoryville, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 17, 1983, Ser. No. 542,433

Int. Cl.[4] B60B *7/04*

U.S. Cl. 29—130 **11 Claims**



1. A paper machine press roll for use in a water environment which comprises a metal cylinder, a urethane cover surrounding said cylinder and presenting a continuous imperforate peripheral surface and permitting moisture from said water environment to pass therethrough to an interface between said cover and said cylinder, an adhesive disposed at said interface bonding said cover to said cylinder, and means in direct fluid communication with the interface venting the adhesive to an end of the cylinder for draining moisture from said interface [between the cover and cylinder] for maintaining the adhesive bond between the cylinder and cover.

4,551,895

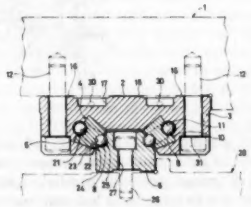
METHOD OF MAKING A LINEAR SLIDE BALL BEARING

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo 158, Japan

Division of Ser. No. 541,640, Oct. 13, 1983, Pat. No. 4,527,841. This application Dec. 21, 1984, Ser. No. 685,014

Int. Cl.[4] B21D *53/12*

U.S. Cl. 29;148.4 R **2 Claims**



1. A method for manufacturing a linear slide ball bearing comprising the steps, at the time of incorporating a bearing

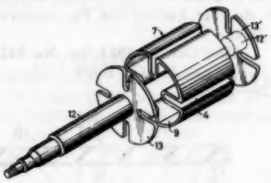
case with a pair of bearing races, a raceway table, a pair of side covers and a number of balls, molding the bearing case and the pair of side covers in synthetic resin, forming recessed grooves by taking out the preplaced core arranged in both the sleeves at the time of molding the bearing case, inserting under pressure the bearing races formed almost the same as the preplaced cores in the recessed grooves, fixing the bearing races in the sleeves of the bearing case while correcting the curve of the bearing case generated by the contraction of the recessed groove when the preplaced core is taken out, and installing the pair of side covers to both the sides of the bearing case subsequently.

4,551,896

METHOD OF MANUFACTURING A ROTOR FOR A ROTARY FLUID PUMP

Hiroshi Sakamaki, Tochigi; Susumu Sugishita, and Yukio Horikoshi, both of Saitama, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1984, Ser. No. 628,212
Claims priority, application Japan, Jul. 16, 1983, 58-129794
Int. Cl.⁴ B23P *15/00*
U.S. Cl. 29—156.4 R **12 Claims**



1. A method of forming a rotor for a vane-type rotary fluid pump, said rotor being generally cylindrical with a plurality of vane slots therein, said method comprising the steps of:

(a) providing a tubular member having a plurality of generally flat sections and a plurality of corner portions between said flat sections;

(b) forming slots in said flat sections by deforming said tubular member;

(c) forming said slots into said vane slots by means of a die; and

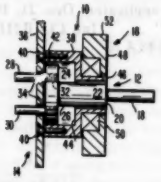
(d) forming said corner portions into the outer peripheral surface of said rotor by means of a die.

4,551,897

STRING REMOVER

Dewey L. Holt, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 15, 1983, Ser. No. 551,796
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—235 **1 Claim**



1. A string remover for breaking and coiling a bale encircling length of string, said string remover comprising:

a plurality of spaced, generally parallel, rigid fingers secured at first ends to a first face of a hub and extending forwardly of said hub, said finger adapted to straddle the string to be removed;

a shank having a rearwardly extending shaft at a first end and said hub at a second end;

a push-off plate carried by and slideable along said fingers between a string removal position and a string discarding position to effect separation of the string from said finger, said fingers passing through apertures in said push-off plate;

a sleeve concentric with, and slideable along said shank, said push-off plate being secured at a first end of said sleeve, a second end of said sleeve terminating in a radially inwardly extending web;

a cylinder secured to said web and closely overlying said shank, said cylinder carrying a bearing mounted handwheel; and

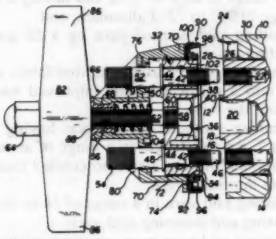
means to rotate said shank and said fingers to cause tensioning and breakage of the string and coiling of the broken string about said fingers, movement of said handwheel forwardly along said shank effecting movement of said push-off plate forwardly relative to said fingers to effect separation of said coiled string from said fingers whereby the string may be removed from its bale encircling position.

4,551,898

CRANKSHAFT SEAL INSTALLING TOOL

Lawrence A. Provost, Warren, Mich., assignor to Kent-Moore Corporation, Warren, Mich.

Filed Feb. 6, 1984, Ser. No. 577,159
Int. Cl.⁴ G23P *19/04*
U.S. Cl. 29—235 **5 Claims**



1. A crankshaft seal assembly tool for use with a crankshaft having an axis, a cylindrical end portion and a radial end surface intersected by a pair of axially extending threaded holes located on opposite sides of the crankshaft axis comprising, in combination, an adapter having an axis, a crankshaft mounting end transversely disposed to said axis and a concentric cylindrical guide surface intersecting said mounting end of a diameter substantially equal to the diameter of the crankshaft cylindrical end portion, a pair of axially extending threaded fasteners mounted upon said adapter located on opposite sides of said adapter axis adapted to extend beyond said mounting end and be received within the crankshaft holes when the adapter mounting end engages the crankshaft end surface to attach said adapter to the crankshaft end surface and maintain said adapter guide surface concentric and aligned with the crankshaft end portion, a ram mounted upon said adapter for relative axial movement thereto having an annular seal abutment head radially extending beyond and in radial alignment with said adapter guide surface having an abutment surface substantially perpendicular to said adapter axis, a pair of axially extending openings defined in said ram slidably receiving said threaded fasteners, said fasteners being of such length as to extend through said ram for direct access thereto, a threaded shaft coaxially mounted upon said adapter, and a nut threaded upon said shaft engagable with said ram for axially moving said ram on said threaded shaft from a seal loading position wherein said abutment head is axially retracted away from said adapter mounting end to expose said adapter guide surface permitting an annular seal to be mounted thereon to a seal installed position wherein said head is axially translated across said guide

surface to displace the seal therefrom onto the crankshaft cylindrical end portion.

4,551,899

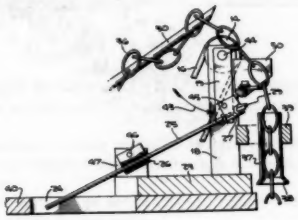
APPARATUS FOR THREADING CHAIN ONTO A LAMP CORD

Richard A. Castillo, Newbury Park, Calif., assignor to Modulite Corporation, Montebello, Calif.

Division of Ser. No. 445,021, Nov. 29, 1982, Pat. No. 4,506,427. This application Dec. 10, 1984, Ser. No. 667,004

Int. Cl.[4] B23P *19/04*

U.S. Cl. 29—241 **3 Claims**



1. Apparatus for threading a lamp cord chain onto a lamp cord comprising:

an elongated, cylindrical crosshead shaft, one end portion of which is slidingly constrained to move in a pivoted crosshead, the other end of which is attached to and constrains the movement and orientation of a pivoted head member;

a driven rotating member pivotally connected to said pivoted head member for driving said pivoted head member in an arc;

chain link engaging fingers attached to said pivoted head member for engaging and releasing links of a lamp cord chain to be threaded;

a chain feed fixture for positioning links of a lamp cord chain to be threaded so as to be engaged by said chain link engaging fingers;

an elongated, cylindrical, hollow lamp cord chute for receiving said lamp cord to be threaded through its hollow interior and positioned so as to receive said links of said lamp cord chain as released from said chain engaging fingers onto its elongated cylindrical exterior;

means for driving said driven rotating member.

4,551,900

METHOD OF AND APPARATUS FOR MOUNTING SEPARABLE SLIDE FASTENER CONNECTORS

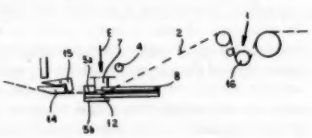
Henning Hansen, Aichtal, and Helmut Schneider, Stuttgart, both of Fed. Rep. of Germany, assignors to Dr. Karl F. Nagele Feinmaschinenbau GmbH & Co, Filderstadt, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,273

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3402908

Int. Cl.[4] B21D *53/50*; **A41H** *37/06*

U.S. Cl. 29—408 **13 Claims**



1. A method of mounting box and pin connection elements on an end of a stringer for a separable slide fastener which comprises the steps of:

(a) advancing a stringer band comprising a pair of stringer halves having interdigitating coupling elements and provided with sliders for each of a succession of stringers and T-shaped windows in a direction of advance of said band along a stringer plane so that a shank portion of each window extends in said direction and edges of said shank portion are formed on respective stringer-half tapes;

(b) deflecting said band at a mounting station along a path of the band so that a stretch ahead of each window is inclined at a mounting angle at said plane and said edges are exposed through the window and in a shadow of said stretch; and

(c) inserting through each window in said shadow of said stretch a pin element onto one of said edges and a box element onto the other of said edges and coupling said element onto the respective edges.

4,551,901

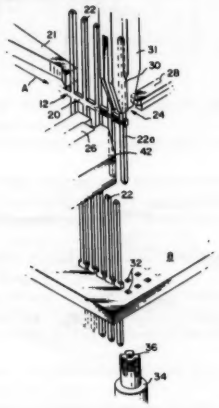
COMPONENT INSERTION APPARATUS

George Bonifanti, Hummelstown; Mark F. Jackson, Harrisburg; Karl H. Letsch, Wyomissing; Bruce C. Longenecker, Harrisburg; Phillip E. Loomis, Harrisburg; Hung T. Nguyen, Harrisburg; Leo V. Schuppert, Jr., York; Richard V. Spong, Etters, and Edward J. Paukovits, Jr., Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 24, 1984, Ser. No. 582,996

Int. Cl.[4] H05K *13/04*

U.S. Cl. 29—564.6 **7 Claims**



1. Apparatus for severing components from a strip of components and inserting each severed component into a workpiece, the apparatus comprising a component insertion tool, means for feeding a strip of components incrementally towards the strip severing station with one of the components leading, means for severing the leading component from the strip at the severing station, a drive electric motor, a camshaft operatively connected to the motor, camming means on the camshaft connected to the insertion tool, to the strip feeding means and to the strip severing means, to cause them to be driven by the motor so that the leading component is fed to the severing station and is there severed from the strip, and is then inserted into the workpiece by the insertion tool; in which apparatus the motor is connected to the camshaft through step-down transmission means, the camshaft having thereon a first disc cam having formed in a face thereof at least one endless first cam track for a cam follower connected to the insertion tool and on its opposite face at least one endless second cam track for a cam follower connected to the severing means, the strip

feeding means being driven by a second cam on the camshaft, which cam is spaced from the first cam in the feed direction of the strip of components and has thereon an endless cam track for a cam follower connected to the strip feeding means, the strip severing means and the insertion tool, being arranged substantially in the same plane.

4,551,902

DEVICE FOR MOUNTING AND REMOVAL OF POLISHING WHEELS IN MACHINES FOR POLISHING STONES OR LIKE MATERIALS

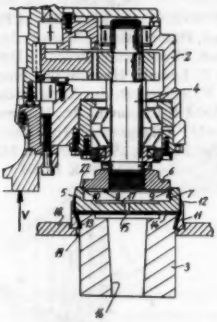
Bernard Thibaut, Vire, France, assignor to Thibaut S.A., Vire, France

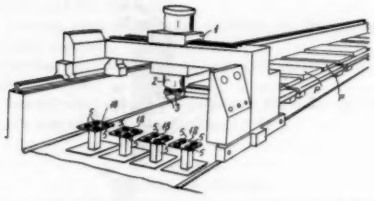
Filed Sep. 5, 1984, Ser. No. 647,696

Claims priority, application France, Sep. 6, 1983, 83 14183; Jun. 19, 1984, 84 09547; European Pat. Off., Aug. 17, 1984, 84401684.0

Int. Cl.[4] B24D *7/16*; B23Q *3/157*; B24B *45/00*

U.S. Cl. 29—568 **13 Claims**





1. A device for mounting and removal of polishing wheels carried by rotary shafts of the polishing head of a polishing machine by means of two coupling members provided respectively on the free ends of said rotary shafts and on the coupling faces of said polishing wheels, the first coupling member being designed in the form of a disk or plate having a frusto-conical external wall whilst the second coupling member is adapted to clamp the external wall of said plate, wherein:

the second coupling member is formed of material which is at least partly elastic and is designed in the shape of a cup having a frusto-conical internal wall similar in profile to the external wall of the plate which constitutes said first coupling member ;

the bottom wall of said cup-shaped member is provided with:

a bore through which air is discharged at the time of forcible assembly of the two coupling members and through which air under pressure is blown-in between said members in order to separate these latter ;

a recess for constituting a pressure chamber at the time of blowing of air under pressure through the bore for the purpose of separating said two coupling members.

4,551,903

AUTOMATIC TOOL CHANGING MECHANISM FOR INDUSTRIAL ROBOTS

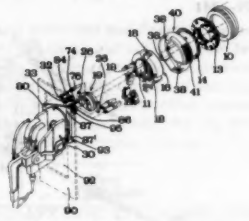
Luciano Bisiach, Strada Comunale San Vito-Revigliasco, 350, 10133 Turin, Italy

Filed May 22, 1984, Ser. No. 612,912

Claims priority, application Italy, Feb. 13, 1984, 67130 A/84

Int. Cl.[4] B23K *9/12*; B23Q *3/155*

U.S. Cl. 29—568 **12 Claims**



1. An automatic tool changing mechanism for industrial robots with a toolholder head having a plurality of axes of movement and provided with a toolholder end flange, said mechanism comprising

a connection plate firmly secured to a tool and having a projection provided with a plurality of radial lugs and a corresponding plurality of resiliently compressible retainers mounted respectively on each radial lug;

a coupling device for coupling said tool to the robot by means of said connection plate, said coupling device comprising a hollow cylinder firmly anchored to said toolholder end flange of said toolholder head of the robot, and an annular surface adapted to engage said projection of said connection plate of said tool, and a cylindrical outer surface rotatably supporting a segmental crown gear provided forwardly with a plurality of claws adjacent said radial lugs of said connection plate and peripherally with engagement means for rotating said segmental crown gear by means of external actuator means between a first unlocked position and a second locked position;

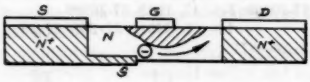
a toolholder magazine comprising a frame arranged in a predetermined fixed position with respect to the robot and accommodating said tool with said connection plate in a predetermined position and having an actuator member engaging said engagement means on said segmental crown gear when said coupling device is in a position engaging said projection for rotating said segmental crown gear between said unlocked and locked positions;

the arrangement being such that by moving said coupling device forwardly close to said connection plate of said tool located in said toolholder magazine, with said segmental crown gear in said unlocked position, said claws are released by said radial lugs and said engagement means of said segmental crown gear are gripped by said actuator member of said toolholder magazine so that when said segmental crown gear is moved into said locked position by actuation of said actuator member, said claws move behind said radial lugs to grip said resiliently compressible retainers and thus create a reaction pressure between said annular surface of said hollow cylinder and said projection on said connection plate whereas by moving said actuator member in the opposite direction said segmental crown gear is returned to said unlocked position to release said claws and thus said coupling device from said connection plate.

4,551,904
OPPOSED GATE-SOURCE TRANSISTOR

John J. Berenz, Lawndale, Calif.; G. Conrad Dalman, and Charles A. Lee, both of Ithaca, N.Y., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 347,226, Feb. 9, 1982,. This application Jun. 11, 1984, Ser. No. 618,969
Int. Cl.[4] H01L *29/80*
U.S. Cl. 29—571 3 Claims



1. A method for fabricating a field-effect transistor capable of operation at extremely high frequencies, said method comprising:

ion-implanting a source region of relatively short effective length and selected conductivity type in a semi-insulating substrate;

epitaxially growing an active channel region over the substrate and the source region;

ion-implanting drain contact regions at each end of the active channel region;

depositing gate metal over the active channel region;

selectively removing the gate metal to define a gate of desired length located directly opposite the source region and in a symmetrical relationship with it;

depositing ohmic metal over the drain contact regions;

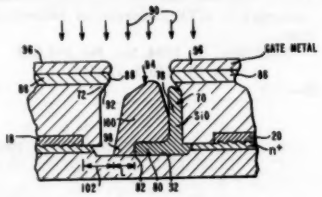
forming an opening in the substrate from beneath, to expose the source region; and

forming a metallic layer on the underside of the substrate, including the opening, to act as a ground plane to which the source region is connected.

4,551,905
FABRICATION OF METAL LINES FOR SEMICONDUCTOR DEVICES

Pane-Chane Chao, Liverpool, and Walter H. Ku, Ithaca, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 9, 1983, Ser. No. 550,284
Int. Cl.[4] H01L *21/285*
U.S. Cl. 29—571 12 Claims



1. A method of fabricating a submicron metal line for a semiconductor device gate electrode, comprising:

depositing a layer of resist material on a semiconductor surface;

defining a gate pattern in said resist material and producing therein a resist profile which exposes a predetermined area of said semiconductor surface;

forming a gate support wall within and on the surface of said, resist profile by angled deposition of a gate support wall material to produce a gate cavity, said gate cavity having a bottom opening at said semiconductor surface, the dimension of said bottom opening being determined by the thickness of said layer, of resist material and the angle of deposition of said gate support wall material;

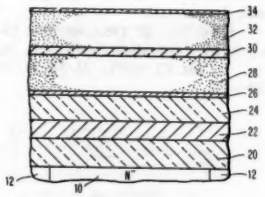
forming within said gate cavity a gate electrode by deposition of a gate material, said gate material being deposited on at least a part of said exposed semiconductor surface at said bottom opening of said gate cavity to form a Schottky junction with said semiconductor and being further deposited on the interior surface of said gate support wall within said gate cavity and

removing said layer of resist material to produce a linear gate electrode mounted on said semiconductor surface and supported by said gate support wall.

4,551,906
METHOD FOR MAKING SELF-ALIGNED LATERAL BIPOLAR TRANSISTORS

Seiki Ogura, Hopewell Junction; Jacob Riseman, Poughkeepsie; Nivo Rovedo, Poughquag, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,629
Int. Cl.[4] H01L *21/265, 21/225*
U.S. Cl. 29—571 10 Claims



6. The method of forming closely spaced openings to a semiconductor surface comprising:

providing a monocrystalline semiconductor body having said surface;

forming an insulating layer on said surface region;

forming a silicon dioxide layer over said insulating layer;

forming a first silicon nitride layer upon said first silicon dioxide layer;

forming a first polycrystalline silicon layer upon said first silicon nitride layer;

forming a second silicon nitride layer upon said first polycrystalline silicon layer wherein said second silicon nitride layer is substantially thicker than said first silicon nitride layer;

forming a second polycrystalline silicon layer upon said second silicon nitride layer;

forming a third silicon nitride layer upon said second polycrystalline silicon layer;

patterning said third silicon nitride layer and said second polycrystalline silicon layer, and oxidizing the resulting exposed edge of said second polycrystalline silicon layer to produce a first silicon dioxide sidewall above where a designated central region in said semiconductor is to be formed;

removing the remaining said third silicon nitride layer and said second polycrystalline silicon layer which leaves the said first silicon dioxide sidewall;

removing all portions of said first silicon dioxide sidewall except that portion thereof which is over said designated central region;

depositing a first organic polymeric material onto said second silicon nitride layer to planarize the surface with said first sidewall;

removing said first sidewall, second silicon nitride layer thereunder, and said first polycrystalline silicon layer thereunder by anisotropic reactive ion etching and that removing said first polymeric material;

oxidizing the sides of the resulting exposed said first polycrystalline silicon layer to form a second silicon dioxide sidewall over the designated said closely spaced openings over said semiconductor body;

removing the remaining said second silicon nitride layer;

depositing a second organic polymeric material onto the upper surface of said first silicon dioxide layer and to fill said opening within said second sidewall;

removing the portions of said second sidewall, and said first silicon nitride layer, above the designated closely spaced openings by anisotropic reactive ion etching; and

removing said second organic material, the remaining said first polycrystalline silicon layer; and said first silicon dioxide and insulating layers to give said openings having substantially vertical surfaces down to said semiconductor surface while leaving a mesa of said insulating layer between said openings.

4,551,907

PROCESS FOR FABRICATING A SEMICONDUCTOR DEVICE

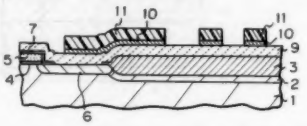
Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

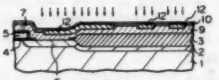
Filed Nov. 23, 1983, Ser. No. 554,544

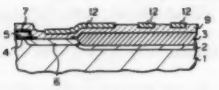
Claims priority, application Japan, Nov. 30, 1982, 57-210133

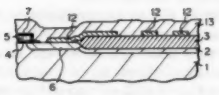
Int. Cl.⁴ H01L *21/24, 21/28*

U.S. Cl. 29—571 **18 Claims**









1. A process for fabricating a semiconductor device, comprising the steps of:

forming a silicon layer on a substrate;

forming a metal silicide layer on only a portion of the surface of the silicon layer, with the remaining portion of said surface of the silicon layer being uncovered by the metal silicide layer; and

oxidizing both the metal silicide layer and said portion of the silicon layer which is not covered by the metal silicide layer, in a direction from the top surface to the inside thereof;

wherein the silicon layer is entirely converted to a silicon dioxide layer and the metal silicide layer sinks in said silicon layer to said substrate.

4,551,908

PROCESS OF FORMING ELECTRODES AND INTERCONNECTIONS ON SILICON SEMICONDUCTOR DEVICES

Eiji Nagasawa; Hidekazu Okabayashi; Mitsutaka Morimoto, and Kohei Higuchi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

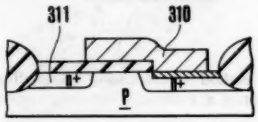
Continuation of Ser. No. 388,544, Jun. 15, 1982, abandoned.

This application Oct. 2, 1984, Ser. No. 657,080

Claims priority, application Japan, Jun. 15, 1981, 56-91829; Nov. 11, 1981, 56-180518; Feb. 10, 1982, 57-19923; Feb. 12, 1982, 57-20908; Feb. 12, 1982, 57-20909

Int. Cl.⁴ H01L *21/265, 21/28*

U.S. Cl. 29—571 **7 Claims**



1. A process forming a layer of metal silicide having a high melting point on a major surface of a semiconductive substrate of silicon, comprising the steps of:

forming an insulating film on the major surface of the silicon substrate;

defining an opening in said insulating film;

thereafter depositing a layer of molybdenum over said major surface of the silicon substrate;

implanting ions so as to mix an interface between the molybdenum layer and the silicon substrate;

thereafter heating a resulting structure of said silicon substrate, insulating film and molybdenum layer in a temperature range of from 400 to 650 degrees Celsius to effect a silicide forming reaction for the molybdenum at said opening;

selectively etching away an unreacted layer of said molybdenum on said insulating film so as to self-align the silicide layer of molybdenum with said opening; and

then annealing said silicon layer in a non-reducing gas atmosphere at a temperature ranging from 800 to 1,100 degrees Celsius for repairing damage induced by ion implantation and lowering silicide resistivity.

4,551,909

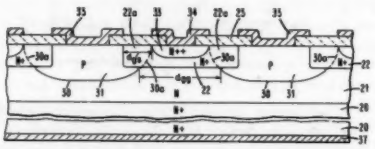
METHOD OF FABRICATING JUNCTION FIELD EFFECT TRANSISTORS

Adrian I. Cogan, Waltham, and Izak Bencuya, Needham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 29, 1984, Ser. No. 594,613

Int. Cl.⁴ H01L *21/265*

U.S. Cl. 29—571 **10 Claims**



1. The method of fabricating a junction field effect transistor comprising

providing a body of semiconductor material including a substrate of semiconductor material of one conductivity type of relatively low resistivity and a layer of semiconductor material of the one conductivity type of relatively high resistivity contiguous said substrate, said layer having a surface at a surface of the body;

introducing conductivity type imparting material of the one conductivity type into said layer from said surface to form a surface layer of semiconductor material of the one conductivity type of relatively low resistivity adjacent to said surface and an underlying layer of semiconductor material of the one conductivity type of relaively high resistivity between said surface layer and said substrate;

forming a layer of protective material adherent to said surface;

removing portions of said layer of protective material to expose alternating gate surface areas and source surface areas in said surface;

introducing conductivity type imparting material of the opposite conductivity type into said surface and underlying layers from said gate surface areas to produce zones of graded concentration of conductivity type imparting material of the opposite conductivity type with the highest concentration adjacent to said gate surface areas thereby forming gate regions of the opposite conductivity type extending from the gate surface areas for a greater distance into said underlying layer than into said surface layer;

introducing conductivity type imparting material of the one conductivity type into said surface layer from said source surface areas to produce source regions of the one conductivity type of lower resistivity at said source surface areas; and

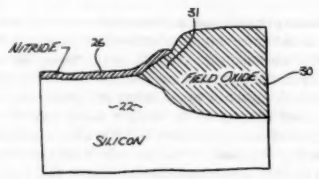
applying conductive material to form source and gate contacts in ohmic contact with said source and gate regions at said source and gate surface areas, respectively, and to form a drain contact with said substrate.

4,551,910

MOS ISOLATION PROCESSING

Elizabeth L. Patterson, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 27, 1984, Ser. No. 675,128
Int. Cl.⁴ H01L *21/76, 21/94*
U.S. Cl. 29—576 W **9 Claims**



1. A process for the isolation of semiconductor elements on a silicon substrate comprising the steps of:

thermally growing a first silicon nitride layer of a first thickness on the surface of said substrate;

depositing a second layer of silicon nitride of a second thickness on said first layer;

exposing predetermined regions of said substrate by removing portion of said first and second layers;

forming an oxide on said exposed regions by subjecting said substrate to an atmosphere of chlorine ambient at a temperature above that of the flow point of silicon dioxide;

further oxidizing said exposed regions in a pressurized atmosphere in the presence of oxygen;

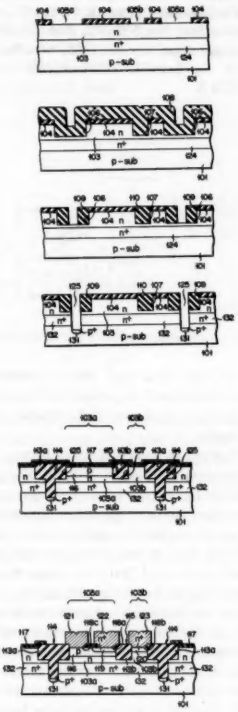
whereby the formation of oxide at the nitride-substrate interface is reduced, and electrical isolation of semiconductor elements is achieved in a reduced area.

4,551,911

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Gen Sasaki, Yokohama, and Shuichi Kameyama, Itami, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 16, 1983, Ser. No. 563,105
Claims priority, application Japan, Dec. 28, 1982, 57-233541
Int. Cl.⁴ H01L *21/82, 21/312, 21/26*
U.S. Cl. 29—576 W **12 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:

forming a first groove in a semiconductor substrate surrounding that section of said semiconductor substrate in which an isolation is to be formed and a second groove narrower than said first groove in said section of said semiconductor substrate which is surrounded by said first groove;

depositing a first layer of isolating material over the entire surface of said semiconductor substrate, said first layer having a thickness less than half the width of said first groove and greater than half the width of said second groove;

anisotropically etching said first layer of isolating material to eliminate substantially its thickness, thus leaving said first layer of isolating material on the side walls of said first groove and entirely in said second groove;

introducing an impurity into the bottom of said first groove, using said first layer of isolating material remaining on said side walls of said first groove as a mask, thereby forming an impurity region;

filling said first groove with a second layer of isolating material, thus leaving said first and second grooves entirely filled with said isolating material; and

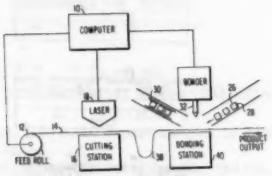
forming a semiconductor element in said section of said semiconductor substrate which is surrounded by said impurity region and said isolating material in said first groove.

4,551,912

HIGHLY INTEGRATED UNIVERSAL TAPE BONDING

Robert Marks, So. Burlington; Douglas W. Phelps, Jr., Burlington; Sigvart J. Samuelsen, Burlington, and William C. Ward, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 509,507, Jun. 30, 1983, abandoned.
This application Apr. 1, 1985, Ser. No. 718,817
Int. Cl.[4] H01L *21/60*
U.S. Cl. 29—576 S **12 Claims**



1. A method of interconnecting semiconductor devices comprising:

providing at least first and second semiconductor chips having no predefined sequence for bonding;

providing a sheet of a material suitable for forming into metallic leads;

moving said sheet of material to a cutting station having a cutting tool operable under control of a computer;

cutting patterns having no predefined sequence in said sheet at said cutting station by directing movement of said cutting tool in response to control signals from said computer to trace one or more first patterns in said sheet that is personalized for said first semiconductor chip and subsequently moving said cutting tool under computer control to trace one or more second patterns in said sheet that is personalized for said second semiconductor chip and different from said first patterns such that said patterns are created on demand by said cutting section;

moving said one or more first and second patterns in said material to a bonding station having a bonding tool operable under control of said computer;

bonding at least one of said first patterns to said first semiconductor chip and bonding at least one of said second patterns to said second semiconductor chip at said bonding station under control of said computer to form a semiconductor chip assembly; whereby

patterns personalized to respective semiconductor chips can be created and bonded utilizing a single set of cutting and bonding tools.

4,551,913

COMPONENT DELIVERY SYSTEM

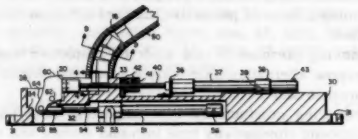
Carl Campisi, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 7, 1983, Ser. No. 501,955
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—740 **6 Claims**

1. In an automated assembly system including a plurality of components having first mounting means, conveyer means carrying a circuit board to a work station, second mounting means on said circuit board for cooperating with said first mounting means for mechanically and electrically attaching said components to said circuit board, and insertion means for moving components from said work station into position on said circuit board; means for presenting said components to said insertion means with a precise orientation comprising:

a chute for delivering said components to a platform at said work station with a given orientation;

a pivotably mounted receiver positioned at said work station adjacent said platform and including means cooperating



with said first mounting means for precisely locating said components;

means sequentially moving components from said platform into engagement with said receiver; and

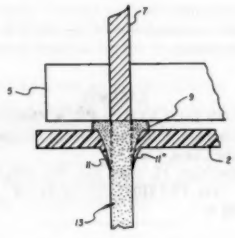
means pivotably moving said receiver and said precisely located component into said precise orientation.

4,551,914

METHOD OF MAKING FLEXIBLE CIRCUIT CONNECTIONS

William A. Stiggelbout, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 5, 1983, Ser. No. 539,345
Int. Cl.[4] A05K *3/34*
U.S. Cl. 29—837 **5 Claims**



1. A method of providing an electrical connection to a flexible circuit member having an electrical contact pad of solderable material on one side thereof, comprising the steps of: piercing said contact pad and said flexible circuit member with an electrically conductive pin member and producing an opening therein, and causing solder to flow along said pin member and through said opening in said flexible circuit member from the side thereof opposite to that on which said contact pad is disposed to thereby solder said contact pad to said pin member.

4,551,915

METHOD FOR TERMINATING A HIGH VOLTAGE CABLE

Peter L. Larsson, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 6, 1983, Ser. No. 483,007
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—858 **3 Claims**

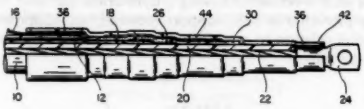
1. A method of terminating a high voltage cable comprising the steps of:

(a) cutting back a cable jacket by a predetermined amount, leaving an exposed shield portion that includes a conductive layer;

(b) cutting back an insulating layer of said cable by a predetermined amount, leaving an exposed length of a cable conductor for connection to a connector;

(c) connecting the exposed length of conductor to a connector;

(d) positioning a layer of semiconductive stress control material having a substantially uniform thickness over an exposed cut back portion of the insulation layer; and



(e) providing an electrically conductive layer of material that overlies and is in contact with the semiconductive stress control material over the exposed shield portion and extending along the stress control material for a predetermined distance; and

(f) applying an insulating layer over the stress control layer.

4,551,916

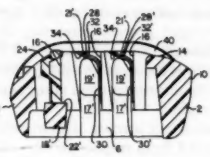
RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 519,565, Aug. 2, 1983, Pat. No. 4,498,325, which is a continuation-in-part of Ser. No. 419,202, Sep. 17, 1982, Pat. No. 4,492,024. This application Oct. 15, 1984, Ser. No. 660,950

Int. Cl.[4] B26B *21/22*

U.S. Cl. 30—50 **2 Claims**



1. A razor blade assembly comprising a body member of molded plastic, said body member including a front portion, a back portion, spring finger guard support means, and spring finger blade support means, a guard member mounted on said body member and biased by said spring finger guard support means, blade means mounted on said body member and biased by said spring finger blade support means, said blade means comprising a base portion and a cutter portion, the base and cutter portions being disposed at an obtuse angle to each other, said spring finger blade support means comprising a finger molded integrally with said body member, said finger engaging an underside of said cutter portion and a side of said base portion, said blade means being disposed in slots in end portions of said body member, said finger exercising a bias against said cutter portion underside and simultaneously a bias against said base portion side.

4,551,917

KNIFE WITH LOCKING FOLDING BLADE

Michael L. Walker, Box 2343, Taos, N. Mex. 87571

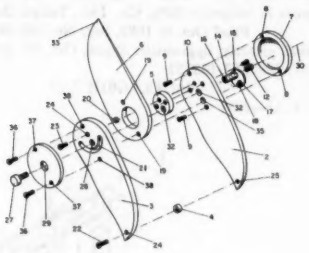
Filed Oct. 29, 1984, Ser. No. 665,739

Int. Cl.[4] B26B *1/04*

U.S. Cl. 30—161 **12 Claims**

1. A knife comprising generally a handle and a blade wherein the handle is formed by a first parallel plate and a second parallel plate assembled so that the first parallel plate and the second parallel plate are spaced apart along a transverse axis, said parallel plates defining a pocket into which the blade will fold, a means defining a fixed bushing on the first parallel plate along the transverse axis toward the second parallel plate, and the blade having a point end and a butt end, and wherein there is a means for defining a bearing surface through the butt end of the blade, wherein said bearing surface is sized to slideably fit over the fixed bushing, thus enabling the blade when disposed over the fixed bushing between the parallel plates to rotate about the transverse axis and be positioned in the pocket, fully extended, or any intermediate position, and

wherein the fixed bushing and the first parallel plate have a slide hole along the transverse axis and the first parallel plate has adjacent to the fixed bushing a positioning hole and wherein in the butt end of the blade, adjacent to the bearing surface, there are a multiplicity of lock pin holes, and wherein the centers of the lock pin holes, one at a time, and the center of the positioning hole are on a line parallel to the transverse axis as the blade is positioned from folded to extended, and



wherein a locking means slideably inserts into the slide hole and the positioning hole from the exterior of the first parallel plate and wherein a biasing means bears against a spring plate affixed to the exterior of the first parallel plate, and the biasing means biases the locking means along the transverse axis toward the second parallel plate, and wherein the locking means is able to engage, through the positioning hole, an aligned lock pin hole in the butt end of the blade, and

wherein the second parallel plate has along the transverse axis a button hole through which a lock release means passes and the lock release means engages the locking means whereby the lock release means may be activated against the biasing means removing the locking means from the lock pin hole allowing the blade to be freely repositioned, and wherein releasing the lock release means enables the biasing means to insert the locking means into any aligned lock pin hole.

4,551,918

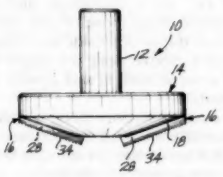
HONEYCOMB CORE CUTTING TOOL AND METHOD OF USING

Dudley G. Smithberg, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 26, 1984, Ser. No. 592,774

Int. Cl.[4] D27G *13/00*

U.S. Cl. 30—347 **2 Claims**



1. A cutting tool for shaping formed plastics comprising: a

shank, a cylindrical base having a tapered outer end, a pair of aligned radially extending cutting units along the tapered outer end of the base with each cutting unit having means for piercing and removing material including piercing cutting points for piercing and removing material from a formed plastic part, spacing between piercing points on each of the two cutting units are matching but uniformly offset with respect to each other to provide a burrless machined surface when the cutting tool is used on the formed plastic, and the means for piercing and removing material from the plastic part comprises: each cutting unit having a radial rake of at least 60 degrees, a clearance angle, and serrations normal to and extending along the length of the cutting unit.

4,551,919

MEASURING INSTRUMENT

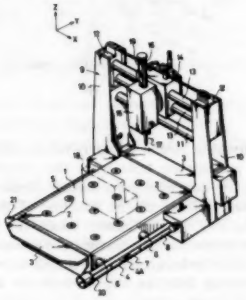
Hideo Sakata, and Yukiji Yoda, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1983, Ser. No. 539,361

Claims priority, application Japan, Oct. 27, 1982, 57-188750; Oct. 27, 1982, 57-188751

Int. Cl.[4] G01B 7/03

U.S. Cl. 33—1 M **13 Claims**



1. A measuring instrument, comprising:

a measuring element support member supporting a measuring element and being reciprocatingly mounted on a guide rail;

a scale affixed onto said guide rail in the longitudinal direction thereof;

a displacement detection unit secured to said measuring element support member, for detecting a displacement value of said measuring element support member relative to said scale; and

scale protection devices provided on opposite sides of said measuring element support member in the longitudinal direction of said scale, respectively, each of which is formed of a belt-like member, one end of which is secured to an end portion of said guide rail and the other end of which wound onto a retractor provided on said measuring element support member, said retractor comprising a support shaft for at least one roller allowing said measuring element support member to move back and forth on said guide rail, and a cylindrical surfaces thereon and along the length thereof, one of said planar side surfaces being disposed on the outer side with respect to said bedplate and has a groove along the length thereof;

an elongated scale secured in said groove and being vertically oriented;

a measuring element support member including a pair of supports movably mounted on said guide rails by rollers and a spindle support member movably provided on shafts extending between said two supports;

a displacement detecting unit provided in one of said supports on the side of said guide rail having said scale, for detecting a displacement value of said measuring element support member relative to said scale; and

a pair of spiral constant load springs fixedly secured at the ends on one side of said measuring element support member to shock absorbers provided at opposite end portions of said guide rail having the scale, and wound at the other ends onto a retractor having a cylindrical member rotatably provided in said support member, and disposed in parallel relation to a surface on said scale thereby covering the same.

4,551,920

REAR SIGHT FOR FIREARMS

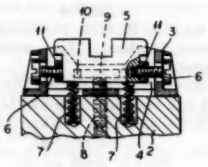
Satish K. Mahotra, Steyr, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed May 11, 1984, Ser. No. 609,190

Claims priority, application Austria, May 20, 1983, 1851/83

Int. Cl.[4] F41G 1/16

U.S. Cl. 33—257 **7 Claims**



1. In a rear sight for a firearm, comprising

a sight plate carrier having two mutually opposite end faces and an open-topped groove extending along said sight plate carrier between said end faces.

a sight plate, which is mounted in said groove and is guided in said groove for adjustment and along said groove and is vertically adjustable,

two transverse adjusting screws, which are parallel to said groove and extend from respective ones of said end faces into said sight plate carrier and are screwed into said sight plate and operable to adjust said sight plate along said groove, and

vertical adjusting means for vertically adjusting said sight plate,

the improvement residing in that

said sight plate is guided in said groove for a vertical adjustment in said groove,

said sight plate is formed with a generally horizontally extending, slotlike opening, and

said vertical adjusting means comprise a vertical adjusting screw, which crosses said transverse adjusting screws at right angles thereto and has a head extending into said slotlike opening and is adapted to be screwed into said firearm.

4,551,921

APPARATUS FOR MEASURING THE GRADIENT OR INCLINATION OF A SURFACE OR OF A LINE

Philippe Puyo, Bordeaux, and Lucien Bouvet, Pessac, both of France, assignors to A.B.F. Industrie S.A., Bordeaux, France

PCT No. PCT/FR83/00020, § 371 Date Sep. 27, 1983, § 102(e) Date Sep. 27, 1983, PCT Pub. No. WO83/02662, PCT Pub. Date Aug. 4, 1983

PCT Filed Jan. 26, 1983, Ser. No. 541,341

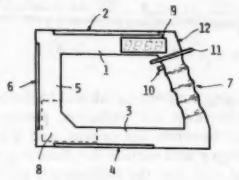
Claims priority, application France, Jan. 27, 1982, 82 01385; Sep. 8, 1982, 82 15320

Int. Cl.[4] G01C 9/06

U.S. Cl. 33—366 **18 Claims**

1. Apparatus for measuring a gradient with respect to a pre-determined reference plane, said apparatus comprising a frame having at least three outer bearing surfaces disposed at

right angles to each other along there sides of said frame, a device integrally connected with said frame and comprising means for sensing and measuring variations in the spatial position of said apparatus and for emitting a signal proportional to the measured angular deviation between one of said bearing surfaces and said reference plane, and means for displaying the value of the measurement taken by said sensing device, said frame being quadrilateral, said three frame sides supporting



said three outer bearing surfaces and said frame having a fourth side comprising a handle which is integrally connected to two of said three sides, said sensing and measuring means further comprising a display device disposed adjacent to said handle, said handle further comprising means for activating said measuring and sensing device and displaying said angular deviation on said display device, said measuring and sensing device being positioned within at least one of said three frame sides.

4,551,922

LINE MARKING DEVICE

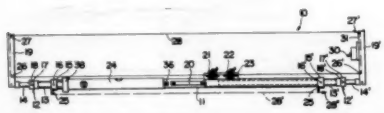
Yoshihiro Someya, 1-27-2, Naka-machi, Musashino-shi, Tokyo, Japan

Filed Aug. 2, 1984, Ser. No. 636,955

Claims priority, application Japan, Aug. 2, 1983, 58-119853[U]

Int. Cl.⁴ B44D *3/38*

U.S. Cl. 33—414 **5 Claims**



1. A line marking device comprising:
an extensible pipe assembly;
first and second arm members pivoted to the opposite ends of said pipe assembly;
an ink pad assembly mounted on one of said first and second arm members;
first and second guide wheels rotatably mounted at the opposite ends of said first arm member;
first and second guide wheels rotatably mounted at the opposite ends of said second arm member;
first and second reels rotatably mounted on said pipe assembly in spaced positions along the length of the pipe assembly;
a line marking string anchored at the opposite ends to said first and second reels and guided along a path defined by said guide wheels;
said first and second guide wheels being adapted to alternately pay out thereof and wind thereabout said line marking string;
a spirit level mounted on said pipe assembly between one end of the pipe assembly and one of said first and second reels;
angle members secured to the opposite ends of said pipe assembly; and
a weighted line marking string having one end anchored to one of said angle members and the other end carrying a weight thereon.

4,551,923

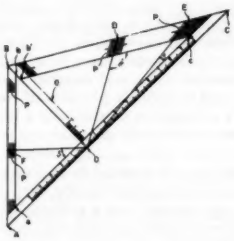
DRAWING TRIANGLE

Sam C. Y. Sung, Taipei, Taiwan, assignor to Hou Sheng Chiang, Taipei, Taiwan

Filed May 24, 1984, Ser. No. 613,578

Int. Cl.⁴ B43L *13/00*

U.S. Cl. 33—476 **10 Claims**



7. A drawing triangle comprising a transparent plate having one obtuse angle and first and second acute angles is characterized in that
a perpendicular starting from the vertex of said obtuse angle meets the base edge of said drawing triangle that opposes said obtuse angle at a right angle at a first point;
from said first point a first line leads to a first edge that opposes said second acute angle and meets said first edge at a second point, said first line making an angle of 30 degrees with respect to said base edge and an angle of 60 degrees with respect to said first edge;
a second line is parallel to said base edge;
a third line is parallel to said first edge;
a fourth line is parallel to said second edge;
a first set of parallel lines is provided between and parallel to said first edge and said third line; and
a second set of parallel lines is provided between and parallel to said second edge and said fourth line.

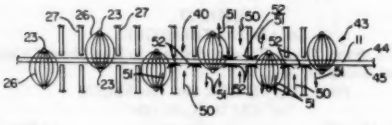
4,551,924
ELECTROSTATIC METHOD FOR TREATING MATERIAL

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation of Ser. No. 548,646, Nov. 4, 1983, abandoned, which is a continuation of Ser. No. 401,078, Jun. 23, 1982, abandoned, which is a division of Ser. No. 386,703, Jun. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 319,114, Nov. 9, 1981, Pat. No. 4,404,754, which is a continuation-in-part of Ser. No. 261,784, May 8, 1981, Pat. No. 4,338,729, which is a division of Ser. No. 124,224, Feb. 25, 1980, Pat. No. 4,283,862, which is a division of Ser. No. 50,807, Jun. 2, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned. This application Jun. 25, 1984, Ser. No. 624,006

Int. Cl.[4] F26B *3/34;* B01D *57/02*

U.S. Cl. 34—1 22 Claims



1. In a method for drying material comprising the steps of disposing said material in a heating means to have said heating means heat at least part of the liquid particles of said material, disposing charged electrode means so as to be adjacent one side of said material when said material is disposed in said heating means and to define a plurality of electrostatic fields that are serially arranged in substantially a like repeating pattern and that are substantially constant and non-oscillating so that said electrostatic fields at least partially extend through said material while said material is disposed in said heating means, and moving said material in one direction through said heating means to cause at least a portion of said material to have the particles of liquid thereof serially moved through said electrostatic fields while said portion of said material is being heated in said heating means whereby said electrostatic fields augment the drying effect of said heating means on said material, the improvement comprising the steps of disposing nozzle means between each pair of adjacent electrostatic fields, and directing a fluid flow through said nozzle means disposed between each pair of adjacent electrostatic fields so as to impinge against said material.

4,551,925
DRIER

Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

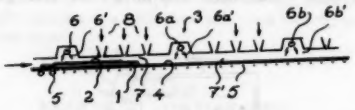
Filed Mar. 2, 1981, Ser. No. 239,587

Claims priority, application Sweden, Feb. 3, 1981, 8100788

Int. Cl.[4] F26B *23/04*

U.S. Cl. 34—4 3 Claims

1. A drier, intended principally for drying printing ink applied to a material by a printing machine, the drier comprising a conveyor device including means for supporting the material as the material passes through the drier, more than two, separately arranged organs which emit ultra-violet radiation for drying and/or hardening the printing ink, the organs which emit UV radiation being spaced a distance of 0.5 to 1.5 meters from each other such that a material which passes beneath a first organ, where the material has been exposed to both UV



radiation for hardening the printing ink and to the heat emitted by the organ which emits UV radiation, passes through a section of the drier between the organs, and a plurality of nozzles arranged above said section for directing cooling air toward the material such that the temperature of the material falls substantially before the material passes beneath a second organ, the cooling air being chilled air.

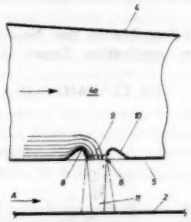
4,551,926
NOZZLE BOX FOR HEAT TREATMENT OF VENEERING

Herbert Aufderhaar, Ibbenbüren, Fed. Rep. of Germany, assignor to C. Keller GmbH u. Co. KG Maschinenfabrik, Ibbenbüren-Laggenbeck, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,364

Int. Cl.[4] F26B *3/04, 13/10*

U.S. Cl. 34—23 14 Claims



1. A nozzle box for the heat treatment of veneer in a dryer for veneers comprising

a bevel at the side of the box facing the veneering and located at the edge where the veneering is approaching; annular recesses on the side of the box facing the veneering with a first portion of the recesses extending into the box and a second portion adjoining the first portion in the box and reverting to the outside to define a funnel-shaped hole in the middle of the annular recess for guiding hot air to treat the veneering.

4,551,927
HANDLING OF TEXTILE YARN

William E. A. Shelton, Oadby, England, assignor to Alan Shelton Limited, Croft, England

Filed Nov. 9, 1981, Ser. No. 319,414

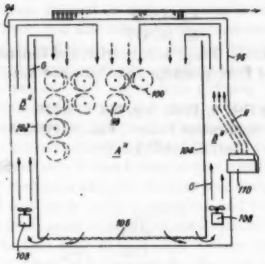
Claims priority, application United Kingdom, Nov. 19, 1980, 8037021; Aug. 12, 1981, 8124631

Int. Cl.[4] F26B *21/06*

U.S. Cl. 34—82 5 Claims

1. Enclosure means for the control of loose lint or fly released by textile yarns during travel between stations in a textile manufacturing process, comprising a completely enclosed housing, a plurality of interconnected compartments within the housing, at least one of which compartments is traversed by a yarn during its travel, air circulation means

within said housing to circulate essentially the same air in a continuous path through the entire cross sectional areas of said compartments with the air first passing through said one compartment and then an other of said compartments, and a partition provided within the other of said compartments comprising a filter screen capable of trapping fly or lint carried by air passing therethrough, and means contained within said completely enclosed housing for conditioning said circulating air, said housing enclosing a plurality of yarn bobbin supports comprising a creel arrangement.



4,551,928

FIBER REMOVING SIEVE FOR TEXTILE DRYERS

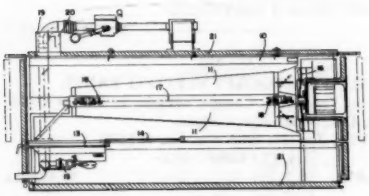
Karl-Heinz Gottschalk, Hamburg, Fed. Rep. of Germany, assignor to Babcock Textilmaschinen GmbH, Seevetal, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 603,198

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 3315755

Int. Cl.⁴ F26B *13/02*

U.S. Cl. 34—82 **6 Claims**



1. In a device for removing fibers or slubs transported in a stream of treatment means in treatment devices, such as dryers or fixation devices for textile goods or the like using circulating air, in which the treatment means is blown repeatedly onto the textile goods to be treated and, after the treatment process, the treatment means is removed therefrom of the type having a housing and a fiber removing sieve mounted in said housing for movement between an operative position in which it is in the path of said stream of treatment means for removing fibers and an inoperative position where it is withdrawn from said stream for cleaning, the improvement comprising:

said fiber removing sieve including two sieve elements disposed in tandem, and connected to one another by entrainment means so that in pushing on one sieve element the other element is pushed, and in pulling on one sieve element the other element is pulled, whereby as one of said sieve elements is moved into the operative position, the other of said sieve elements is moved into said inoperative position, said entrainment means including sealing means for cooperating with said dryer housing to prevent outside air from entering into the stream of treatment means when one of said sieve elements is disposed in said operative position.

4,551,929

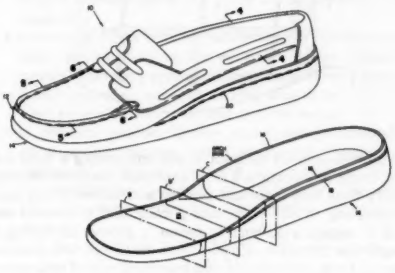
UNIT-SOLED SHOE

John Paris, Apt. 6, 180 Andover St., Andover, Mass. 01810

Filed Feb. 16, 1983, Ser. No. 466,972

Int. Cl.⁴ A43B *3/14*

U.S. Cl. 36—11 **9 Claims**



1. A shoe comprising a sole having

a ground-contacting surface,

a top surface generally parallel to said ground-contacting surface, and

a peripheral wall extending generally transverse to said ground-contacting and top surfaces, upwardly from said top surface, and along the periphery of the heel portion of said sole, said wall extending only around the rear portion of said sole and

an upper having rearward and forward portions and attached at its rearward portion to an inside surface of said wall, and, at its forward portion, attached only to said top surface.

4,551,930

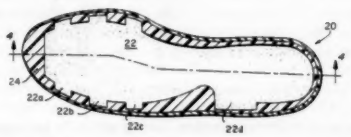
SOLE CONSTRUCTION FOR FOOTWEAR

Kenneth W. Graham, Wakefield; Edward J. Norton, Ipswich, both of Mass., and Shuhei Kurata, Fukuoka, Japan, assignors to New Balance Athletic Shoe, Inc., Lawrence, Mass.

Filed Sep. 23, 1983, Ser. No. 535,288

Int. Cl.⁴ A43B *13/14, 13/18, 13/04*

U.S. Cl. 36—30 R **25 Claims**



1. For use in footwear, a midsole including an integral heel wedge portion, said midsole formed by a core of a first plastic material having a characteristic of springiness, and a shell of a second, different, more dense plastic material molded about said core to at least substantially encapsulate said core within said shell, and wherein the wall of said shell has a thickness of at least about 0.5 mm.

4,551,931

SOLE FOR A CROSS-COUNTRY SKI BOOT AND ASSOCIATED BINDING BASE PLATE

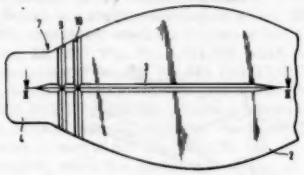
Alfred Bente, Herzogenaurach, Fed. Rep. of Germany, assignor to Adi Dassler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Jan. 26, 1984, Ser. No. 574,051

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304538

Int. Cl.[4] A43B *5/04*

U.S. Cl. 36—117 **7 Claims**



1. In a cross-country ski boot, a sole comprising a front sole portion, a rear sole portion, a front extension portion extending forwardly from said front sole portion and having a rearward end connecting to said front sole portion and a forward end adapted to engage a ski binding means, a groove extending in the lengthwise direction of said sole in said front sole portion, rearwardly from a position at said rearward end of said extension portion, and at least one groove extending transversely in said front sole portion adjacent to said rearward end of said extension portion, said grooves being adapted to receive corresponding ribs on a ski to which said boot is to be fitted.

4,551,932

SKI BOOT CONSTRUCTION

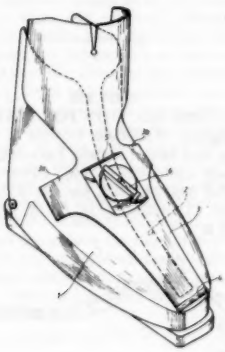
Robert Schoch, Hilzingen, Fed. Rep. of Germany, assignor to Weinmann GmbH & Co. KG, Singen, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,193

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3315071; May 16, 1983, 3317771

Int. Cl.[4] A43B *5/04;* **A43C** *11/20*

U.S. Cl. 36—117 **12 Claims**



1. In a ski boot constuction having an outer boot provided with a frontal opening, a closure tongue overlying said opening and extending beyond both sides of said opening, a movable operating member carried by said tongue, a pair of fastening members connected to said operating member and extending in opposite directions therefrom beyond both sides of said opening, said fastening members being movable transversely of said opening in response to movement of said operating member, and anchor members carried by said boot on opposite sides of said opening for releasable latching engagement by the respective fastening members, the improvement wherein said tongue has a dimension sufficient to overlie wholly said fastening members and both of said anchor members when said fastening members are in latching engagement with said anchor members.

4,551,933

SKI BOOT

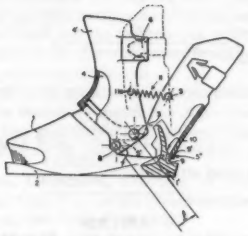
Joseph Morell, Annecy; Jean Paris, Sevrier, and Roland Petrini, Chambery, all of France, assignors to Salomon S.A., Annecy, France

Filed Feb. 9, 1984, Ser. No. 578,428

Claims priority, application France, Feb. 9, 1983, 83 02437

Int. Cl.[4] A43B *5/04*

U.S. Cl. 36—120 **56 Claims**



1. A ski boot comprising:

(a) a shell base;

(b) an upper, at least partially journalled on said shell base, comprising:

(i) a cuff; and

(ii) a rear spoiler, wherein said rear spoiler is adapted to move from an open position to a closed position; and

(c) means for automatically closing said spoiler in response to forward flexion of said cuff.

4,551,934

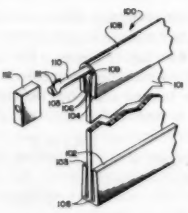
VISIBLE FILE POCKET SUPPORT PANEL

Alan F. Davies, Vancouver, Canada, assignor to Davies Office Equipment, Ltd., Vancouver, Canada

Filed Jan. 27, 1983, Ser. No. 461,538

Int. Cl.[4] G09F *19/00*

U.S. Cl. 40—535 **13 Claims**



1. A visible file pocket support panel suitable for hingedly mounting "n" (where "n" is any whole integer) visible file pockets each having hinge pin defining means extending across one edge thereof and terminating in a pair of laterally projecting hinge elements on opposite sides of the "n" file pockets, and for supporting the "n" file pockets in a flush overlapped array with freedom for pivotal movement about their individual hinge axes and wherein the front free pocket tips on all of the "n" file pockets are visible when all of the "n" file pockets

are flush with the said support panel; comprising, in combination:

(a) means defining a rectangular central base member having front, rear and side edges;

(b) a ramp surface extending rearwardly and downwardly from said base member front edge and terminating short of said base member rear edge;

(c) a flange formed on and extending laterally from at least the front and side edges of said base member;

(d) means defining an edge channel member having an E-shaped cross-sectional configuration including lower, intermediate and upper legs defining lower and upper longitudinally extending slots, and a vertical flange extending upwardly from the free inner end of the upper leg, said laterally extending flange on said base member being received within said lower longitudinally extending slot in said E-shaped channel member and being bonded thereto, and said ramp surface overlying and blocking said upper slot in all areas of said E-shaped channel member forward of the rear edge of said ramp surface with said upper slot being open and exposed on the two sides of said base member rearward of said ramp surface rear edge; and,

(e) means comprising a stop element positioned in said upper slot and spaced rearwardly from said ramp surface rear edge on each side of said support panel by a distance sufficient to accommodate "n" hinge elements on "n" file pockets in the exposed open portion of each of said upper slots between said stop elements and the rear edge of said ramp surface.

4,551,935

DISPLAY PANEL FOR VENDING MACHINES

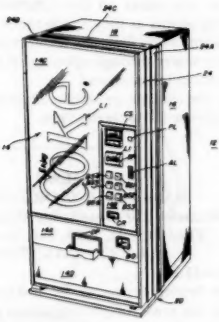
G. Merle Bachmann, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 244,818, Mar. 17, 1981, Pat. No. 4,380,130. This application Feb. 8, 1983, Ser. No. 464,897

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.⁴ G09F *7/00*

U.S. Cl. 40—584 **8 Claims**



1. Display means for an obverse face of a vending machine comprising:

a plurality of panel means defining a like plurality of display fields within a defined display area;

selected ones of said panel means being of contrasting surface characteristics to the remaining said panel means in the provision of selected display configurations in said display area;

one of said selected panel means being a discharge panel means having discharge port means therein for presenting vended products, said discharge panel means extending horizontally across said obverse face of said vending means and dividing said obverse face into upper and lower sections;

another selected one of said panel means being disposed in said upper section and being configured with a substantially rectangular outline with the longest dimension of the rectangle extending vertically of said machine and including logo means so disposed thereon as to suggest the representation by said display panel means of the rectangular front elevational outline of an upright can of product with said logo means thereon; and

control means in a remaining said panel means for controlling the vending of products from said vending machine, said control means including,

secondary product selector button means in a vertical array for selecting secondary products to be vended, each having a secondary product display area thereon bearing indicia representative of a given secondary product to be vended,

a primary product selector button means positioned above said vertical array so shaped and so proportioned as to present a primary product display area thereon larger than a said secondary product display area to provide a dominant pressure thereon in said control means,

said primary product display area being substantially the same primary product logo as said another selected one of said panel means for inducing, in conjunction therewith, the predominant selection of said primary product over said secondary product by an observer of said display means.

4,551,936

IMPROVED TRIGGER MECHANISM FOR SHOTGUNS HAVING SUPERPOSED BARRELS

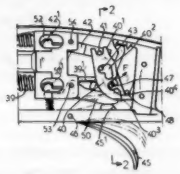
Pierre Chauvet, St. Etienne, France, assignor to Societe d'Exploitation Cooperative de la Manufacture d'Armes et Cycles de St. Etienne (S.C.O.P.D. Manufrance), France, a part interest

Filed May 3, 1983, Ser. No. 490,980

Claims priority, application France, May 5, 1982, 82 08116

Int. Cl.⁴ F41C *19/00*

U.S. Cl. 42—42 R **5 Claims**



1. In a trigger mechanism for shot guns having superposed barrels, said trigger mechanism including a frame (**44**), said mechanism having parallel hammers (**39,52**) for the upper and lower barrels cooperating, upon cocking, with the noses of pivotal sears (**42,52**), said lower hammer (**39**) being extended by a rear tail (**39¹**) for acting upon a pivotally and vertically movable cam (**40**); said cam having an upper end (**40¹**) coacting with a pivot pin (**41**) on the sear (**42**) for the upper barrel and a lower end engagable by the trigger (**45¹**) of the shot gun, said cam being pivoted rearwardly (**F**) about said pivot pin (**41**) to a first position by coaction with said rear tail (**39¹**) and pivoted forwardly (**F1**) to a second position by a spring (**49**) mounted in said frame (**44**) and bearing on said cam, said cam (**40**) having a right-angle opening (**40²**) receiving a first transverse pin (**43**) mounted in said frame (**44**), the rearward pivotal movement of said cam (**40**) moving said transverse pin (**43**) into the horizontal leg of said right-angle opening (**40²**) for preventing vertical movement of said cam (**40**) for blocking firing of the second shot, the forward pivotal movement of said cam by said spring (**49**) following firing of the first shot and retraction of the rear tail (**39¹**) of said lower hammer moving said transverse pin (**43**) into alignment with the vertical leg of said right-angle opening (**40²**) to permit vertical movement of said cam to actuate said upper sear (**42**) upon subsequent manipulation of said trigger (**45**) to fire the second shot from the upper barrel; the improvement comprising:

a generally horizontal arcuate sot (**40⁴**) in the rear surface of said cam and proximate to said lower end thereof, said slot being concentric with said pivot pin (**41**) on said upper sear (**42**); and

a second transverse pin (**47**) integrally mounted in said trigger mechanism frame (**44**) and insertable in said slot when said cam is in said first position to provide a double locking of said cam in addition to that provided by said first pin (**43**) and said right-angle opening (**40²**) against a vertical movement following firing of said first shot to prevent firing of said second shot without a subsequent manipulation of said trigger mechanism, said second transverse pin (**47**) being freed from said slot when said cam is in said second position to permit firing of said second shot by a subsequent manipulation of the trigger.

4,551,937

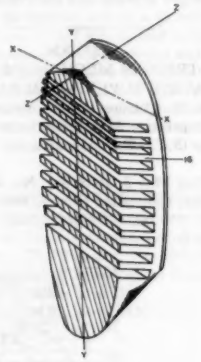
RECOIL PAD UTILIZING STRUTS DISPOSED AT A COMPOUND ANGLE AND HAVING ADJUSTABLE ENERGY-ABSORBING CHARACTERISTICS

Jack C. Seehase, 1200 Osceola Ave., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 577,263, Feb. 6, 1984, abandoned. This application Apr. 2, 1985, Ser. No. 719,223

Int. Cl.⁴ F41C *23/00*

U.S. Cl. 42—74 **20 Claims**



1. An adjustable shoulder pad for use on the end of the stock of a rifle or shotgun, said pad being particularized for use on a designated shoulder and containing a number of generally parallel, elongate slots extending from side to side through said pad, said slots angling downwardly with respect to two orthogonal directions, and being of an essentially consistent size and configuration, such that into said slots, a selected amount of material of a nature to absorb energy may be inserted, a plurality of elongate struts defined by the slots, which struts tend to bend and buckle somewhat at the time the shooter places the pad firmly against his shoulder so as to cause the pad to conform to the configuration of this shoulder, said struts then buckling to a significantly greater extent at the time the gun is fired, said struts, by their placement and angle, causing a significant amount of movement of the stock down as well as away from the shooter's face at the time the gun is fired.

4,551,938

RETRIEVAL OF LOBSTERS AND OTHER OBJECTS

William W. Sheldon, R.F.D. #2, Box 292, Ellsworth, Me. 04605, and Theodore G. Axford, Milbridge, Me., assignors to William W. Sheldon, Ellsworth, Me.

Division of Ser. No. 246,599, Mar. 23, 1981, Pat. No. 4,434,572. This application Feb. 16, 1984, Ser. No. 580,811

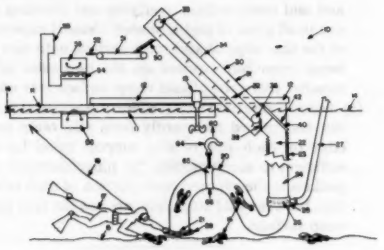
Int. Cl.⁴ A01K *80/00*

U.S. Cl. 43—4.5 **5 Claims**

1. A method for lifting lobsters and similar objects from the bottom or floor of a lobster pound or other shallow water body to a support deck floating above the surface of the water comprising:

establishing a flow of water at low pressure upward from the bottom to the surface of the water in a passageway having a lower flexible portion with an inlet opening end and an upper substantially rigid vertical portion with an outlet opening end positioned adjacent to the surface by injecting air at low pressure in the rigid vertical portion for establishing an air lift, said passageway being of size sufficient to accommodate lobsters and similar objects to be lifted without injury;

drawing the lobsters or similar objects to be lifted from the bottom into the established flow of water and to the surface by selectively moving the lower flexible portion and upward flow of water along the bottom while spacing the inlet opening end above the floor of the water body hovering over the bottom;



maintaining air and water pressure in said passageway at sufficiently low level for lifting the lobsters or similar objects in the flow of water to the surface without blasts of air and without impacts which may be injurious to lobsters;

guiding and deflecting the lobsters as they rise to the surface, by means of in the water flow onto conveying means by positioning an angled surface of the conveying means adjacent to the outlet opening end of the passageway said outlet opening end and said conveying means being located at the surface of the water so that lobsters are guided onto the conveying means as they reach the water surface;

shedding water away from the lobsters or other similar objects by passing water through openings in a direction away from the deflecting lobsters; and

conveying the lobsters or similar objects to the support deck floating above the water surface.

4,551,939

BASS FISHING ORGANIZER

Doyle W. Kitchens, 120 Meandering Way, Del Rio, Tex. 78840

Filed Sep. 22, 1983, Ser. No. 534,969

Int. Cl.⁴ A01K *97/10*

U.S. Cl. 43—21.2 **7 Claims**

1. A bass fishing organizer for holding a plurality of prearranged in the sense of pre-organized and pre-fitted fishing rods and respective associated accessories, comprising:

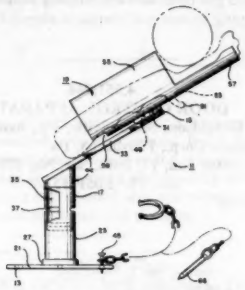
a. at least one mounting base for being affixed to a surface and adapted for supporting the plurality of fishing rods and accessories;

b. a bank member having sufficient length and strength to hold in place the plurality of fishing rods and accessories and holders therefor; said bank member having a central support adjacent its center;

c. said central support and said mounting base having coengaging means for supporting said fishing rods and accessories, said coengaging means including at least one respective throat and shaft that will matingly engage and having respective slots and a groove in the respective throat and shaft; said groove extending through 360° around said at least one shaft such that the bass organizer is rotatable for convenience; there is provided a retainer means that is

removable and said removable retainer means includes a retainer C-clamp for snapping in place into said slot and engaging said groove to hold said central support rotatably coengaging said mounting base by way of said throat and coengaging shaft;

d. respective holders for said fishing rods and accessories; said holders comprising one each for each fishing rod and



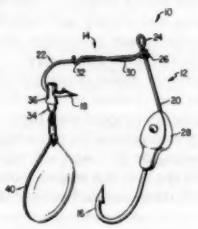
accessory; said holders being connected to said bank member; each said holder having a tubular member adapted to receive a respective handle of a respective said fishing rod to hold it releasably in place and having a top to prevent slipping downwardly of its respective handle of said fishing rod and having a bottom aperture for receiving a trigger member on its said handle to prevent rotation of said fishing rod with respect to said holder.

4,551,940

FISHING LURE

David S. East, Garland, Tex., assignor to Knight Manufacturing Company, Inc., Tyler, Tex.

Filed Apr. 30, 1984, Ser. No. 605,128
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.11 **12 Claims**



1. A fishing lure comprising:

a first fishhook member having a barbed hook, a wire lead integrally connected to said barbed hook and extending therefrom, and an aperture formed at the terminal end of said wire lead for attachment to a fishing line;

a second fishhook member having a barbed hook and being secured to said first fishhook member proximate said aperture and disposed relative to said first fishhook member at a predetermined angle, said second fishhook member being further disposed relative to said first fishhook member so that said barbed hook of said second fishhook member faces said barbed hook of said first fishhook member;

a sinker positioned on said wire lead of said first fishhook member such that said first fishhook member is maintained below said second fishhook member during towing through the water while fishing;

a swivel member positioned on said barbed hook of said second fishhook member; and

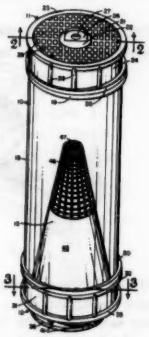
a spinner blade secured to said swivel member and adapted to rotate as the lure is drawn through water.

4,551,941

INSECT TRAP SELECTIVE FOR WASPS

Rodney G. Schneidmiller, 8604 S. Riverway, Spokane, Wash. 99212

Filed Feb. 16, 1984, Ser. No. 580,934
Int. Cl.[4] A01M *1/02*
U.S. Cl. 43—107 **2 Claims**



1. An insect trap selective to wasps comprising, in combination:

a peripheral cylindrical body defining an entrapment chamber and being formed of transparent material that transmits radiant heat and light;

a top element defining a plurality of orifices of size to prevent the passage of wasps therethrough;

a bottom element formed of semi-opaque material having a yellow color attractive to wasps and having;

an undercut lower portion defining a plurality of entryways therein for access therethrough,

a disc-like bottom plate with a diameter greater than that of the undercut portion, immediately therebelow to form a horizontal perch adjacent each entryway and

an attractant well on the upper surface of the bottom plate containing a volatile substance that is a specific olfactory attractant to wasps;

a peripherally defined entry element, interposed between the bottom element and the entrapment chamber defined by the cylindrical body, comprising an upright truncated conic structure defining an orifice into the entrapment chamber at its upper truncated portion, a solid lower portion defining internal ridges to aid wasp crawling thereover and a screen-like upper portion defining plural spaced orifices small enough to prevent the passage of wasps therethrough and allow their crawling thereover.

4,551,942

SPROUT GROWING SYSTEM

James E. Brown, Palm Springs, Calif., assignor to Debra Kay Rinker, Pogosa Springs, Colo.

Filed Mar. 12, 1984, Ser. No. 588,717
Int. Cl.[4] A01C *1/00*
U.S. Cl. 47—14 **12 Claims**

1. A sprout growing method utilizing a plurality of open wide-mouth, screened jar means, such system comprising the steps of:

(a) providing a support for said jar means having a plurality

of jar means-receiving space means wherein said jar means are removably supported in a generally horizontal position;

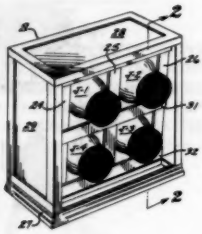
(b) partially filling the first of said jar means with sprout seeds and water for a predetermined time period, screening the mouth of said jar means and draining the water from said jar means;

(c) depositing said first jar means in the first of said space means for a predetermined time period;

(d) repeating step b with second jar means;

(e) moving said first jar means from said first space means into second space means and concurrently replacing said first jar means with said second jar means in said first space means;

(f) repeating step b with third jar means;



(g) moving said first jar means from said second space means into third space means and concurrently moving said third jar means into said first space means and said second jar means into said second space means;

(h) repeating step b with fourth jar means;

(i) moving said first jar means from said third space means into fourth space means and concurrently moving said second jar means into said third space means, said third jar means into said second space means, and said fourth jar means into said first space means;

(j) removing said first jar means from said support for harvesting sprouts and concurrently advancing said second jar means to said fourth space means, said third jar means to said third space means, said fourth jar means to said second space means; and

(k) repeating step b with said first jar means to start a second sprout growing cycle.

4,551,943

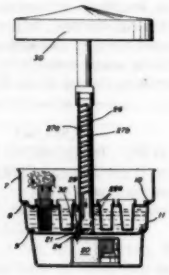
FLOWER MERCHANDISING DISPLAY

Rene J. T. M. Pas, Kapellenberglaan 44, Rozendaal, Netherlands

Filed Jul. 30, 1984, Ser. No. 635,663

Int. Cl.[4] A01G *7/00*

U.S. Cl. 47—41 R **15 Claims**



1. A flower merchandising display comprising a first container, liquid contained in said first container, means to elevate at least a portion of said liquid above the top of said first container, means to return said liquid downwardly to said first container, said means to elevate said liquid comprising enveloping means, said enveloping means extending above said liquid, gas contained in said enveloping means, said means to elevate and said means to return said liquid at least partially disposed in said enveloping means, and means for allowing escape of said gas from said enveloping means being formed in said enveloping means and disposed above the upper level of said liquid.

4,551,944

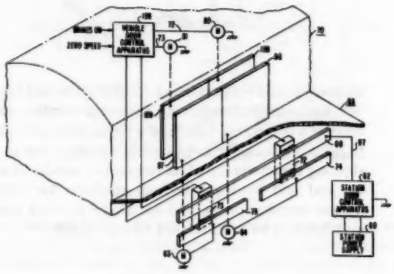
DOOR CONTROL APPARATUS

George W. Donaldson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 17, 1984, Ser. No. 571,611

Int. Cl.[4] E05F *15/20*

U.S. Cl. 49—31 **7 Claims**



1. In apparatus for controlling at least one passenger door of a transit vehicle movable along a roadway track in relation to at least one passenger door of a station, with the station including a passenger platform and a power supply, the combination of:

first motor means coupled to move the one station door for opening and closing said station door,

second motor means coupled to move the one vehicle door for opening and closing said vehicle door,

first conductor means positioned along said platform and coupled with the power supply,

second conductor means positioned along said first conductor means and coupled with the first motor means, and

connection means coupled with the second motor means and carried by said vehicle for providing an electrical connection between the first and second conductor means and energizing the first and second motor means for operating said station door and said vehicle door.

4,551,945

HARDWARE FOR MOVING A SASH INTO LATERALLY DISPLACED PARALLEL POSITIONS

Julius M. von Resch, Stuttgart, Fed. Rep. of Germany, assignor to Gretsch-Unitas GmbH Baubeschläge, Ditzingen, Fed. Rep. of Germany

Filed Sep. 15, 1983, Ser. No. 532,582

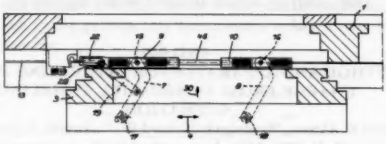
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234677

Int. Cl.[4] E05D *15/10*

U.S. Cl. 49—221 **12 Claims**

1. Apparatus for a window or the like comprising a sash and hardware engageable with said sash for moving said sash from a closed first position into a second position parallel to the first position, said hardware comprising swing arms disposed in spaced relation and pivotally connected to said sash, means for

linearly displacing said sash in the second position, said means comprising at least one movable carriage, means engageable with at least one of said swing arms for securing said sash in the second position and said securing means being disengageable, said securing means comprises an elongated control arm pivot-



ally secured to one of said swing arms, a locking member mounted on said control arm and spaced from the pivotal connection of said control arm to said swing arm, and arresting means in said carriage for receiving and holding said locking member for positioning said control arm and swing arm so that said sash is maintained in the second position.

4,551,946

DOOR SWINGING DEVICE FOR AUTOMATICALLY SWINGING DOORS

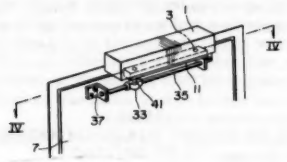
Kei Yoshida, and Yoichiro Saotome, both of Tokyo, Japan, assignors to Chikura Kogyo Kabushiki Kaisha, Japan

Filed Jan. 16, 1984, Ser. No. 570,759

Claims priority, application Japan, Feb. 8, 1983, 58-16959[U]

Int. Cl.⁴ E05F *11/24*

U.S. Cl. 49—340 **3 Claims**



1. A door swinging device for automatically swinging a door hinged to a door supporting frame so as to be angularly movable about a vertical axis, comprising:

means for rotating;

an arm member adapted to be attached at one end thereof to the rotating means so as to be rotated in a plane;

a slider rotatably connected to the other end of the arm member; and

means, adapted to be attached to one of the door and the door supporting frame, for guiding slidably the slider in a direction parallel with the plane, the guiding means including an elongated guide member and a pair of bracket members for supporting respective ends of the guide member on the one of the door and the door supporting frame so that the guide member extends in the direction parallel with the plane, the slider including a first sleeve member adapted to be slidably fitted around the elongated guide member, the slide being further provided with a connecting shaft extending perpendicularly to the axis of the first sleeve member, the arm member being provided at the other end with a second sleeve member for slidably and rotatably fitting the connecting shaft thereinto so that the connecting shaft is perpendicular to the plane, the arm member being provided at the other end with a recess and a through hole formed centrally through the recess, the through hole having a circumferential shoulder formed at one end thereof adjacent to the recess, the second sleeve member being provided at one end thereof with a flange radially outwardly projected from the one end, the flange being tightly fitted into the shoulder, the second sleeve member further including a clamping planar member fitted into and screwed to the recess for clamping the flange of the second sleeve member with the shoulder of the through hole.

4,551,947

DEVICE FOR HONING WORKPIECES

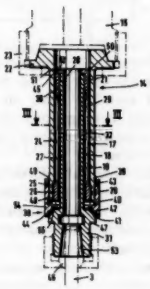
Hans Grimm, Esslingen-Berkheim, and Hermann Fingerle, Lenningen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Gehring Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Ostfildern, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,881

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1982, 3227924

Int. Cl.⁴ B24B *33/02*

U.S. Cl. 51—34 H **19 Claims**



1. A device for honing workpieces, comprising:

a workholding fixture;

bearings associated with said workholding fixture;

a rotatable and axially reciprocable honing tool having upper and lower end sections which are respectively guided in one of said bearings which are associated with said workholding fixture;

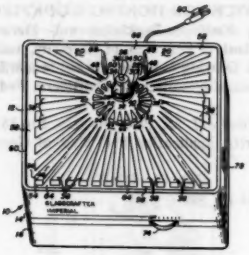
a machine spindle; and

a drive rod disposed between and connected to said honing tool and said machine spinlde, said drive rod for radial mobility in equalization of axial misalignment between said machine spindle and said honing tool being at least partially movable transverse to its axial direction, and being flexible in the radial direction; said drive rod comprising at least two telescopically interlocking tubular pieces which are connected to one another with zero-play universal-joint-like mobility in such a way that they cannot move axially and cannot turn with respect to one anothr although a great radial yielding capability is attained so that radial mobility exists whereby greater axial misalignment between said machine spindle and said honing tool can be equalized, with one of said tubular pieces being connected to said machine spindle, and another of said tubular pieces being connected to said honing tool; said tubular pieces including an inner tube, an intermediate tube, and an outer tube, with said inner and outer tubes being interconnected by means of said intermediate tube; said intermediate tube effecting said interconnection of said inner and outer tubes by means of a predetermined connection, with said intermediate tube having ends provided with fastening means which mate with corresponding fastening sections of said outer and inner tubes.

4,551,948
GLASS SHAPING MACHINE

Morris L. Kindig, 255-58 S. Rengstorff, Mountain View, Calif. 94040; Cleon V. Kindig, deceased, late of San Jose, Calif., and by Eunice L. Kindig, executrix, 1904 Serge Ave., San Jose, Calif. 95130

Filed Oct. 28, 1983, Ser. No. 546,403
Int. Cl.[4] B24B *9/08*
U.S. Cl. 51—98 R **7 Claims**



1. A glass shaping machine comprising, in combination:

a housing means having a top portion supporting a sloping horizontal member with an offset center penetration through said sloping horizontal member, a bottom portion, and a means for connecting said top portion to said bottom portion;

a work surface integrally formed to said sloping horizontal member for supporting a glass being shaped wherein the integral work surface includes a first partial ring of wedge-shaped segments rising above and partially circumscribing said offset center penetration, a first partial arcuate channel uniformly separating said first partial ring from said offset center penetration, said first partial ring being concentric within and non-congruent with a second partial ring of wedge-shaped segments, said first partial ring uniformly separated from said second partial ring by a second partial arcuate channel described by a circular path with a set of terminal ends, said second partial arcuate channel interrupted at each of said terminal ends by a wedge-shaped segment common to each of said first and said second partial rings, said wedge-shaped segments comprised of a narrow edge and a broad edge, said broad edge terminating in a flush vertical outer surface; said broad edges of said first partial ring of wedge-shaped segments extending radially from said offset center penetration and said broad edges of said second partial ring of wedge-shaped segments extending radially from said second arcuate channel, said flush vertical outer surfaces of said second partial ring of wedge-shaped segments forming a continuous outer channel with a peripheral vertical wall of said top portion of the housing means and further including a groove formed between each adjacent segment of said first and second partial rings and wherein each alternate groove formed between the second partial ring aligns with each corresponding groove formed between said first partial ring and wherein said grooves formed between each segment of said second partial ring lead into said continuous outer channel;

a driving means for rotating a driving shaft protruding through said offset center penetration, the driving means having a variable speed capability and mounted within the housing means;

a grinding support head located external to the housing means above the integral work surface and in mechanical communication with said driving shaft;

a grinding surface shaped to fit and permanently affixed to the grinding support head for finishing and shaping a plurality of glass surfaces;

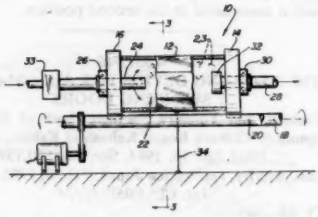
a speed control means for providing a variable voltage input to the driving means, said speed control means mounted within the housing means; and

a rectifying means for translating an alternative current signal to a variable direct current signal and transmitting said variable direct current signal to the driving means, said rectifying means mounted within the housing means.

4,551,949
METHOD AND APPARATUS FOR DISSIPATING STATIC CHARGE FROM AN ABRASIVE TUMBLING OPERATION

David S. Akhavi, Westwood; Richard W. Cudworth, Upland, and John R. Kniffin, Mira Loma, all of Calif., assignors to Iolab Corporation, Covina, Calif.

Filed Jun. 13, 1984, Ser. No. 620,237
Int. Cl.[4] B24B *31/02*
U.S. Cl. 51—164.1 **22 Claims**



11. In an apparatus for smoothing tiny plastic parts by tumbling in an abrasive medium having a chamber of polyhedronal cross-section and having first and second ends attached to said chamber, said ends having a generally circular cross-section, and having roller bars adapted to operatively engage said first and second ends to rotate said chamber,

the improvement comprising:

inlet means extending through and coaxially aligned with said first end;

sealed bearing means for permitting said chamber and said ends to rotate while said inlet remains fixed;

means in fluid communication with said inlet for introducing into the chamber a flow of ionized fluid to dissipate a static electrical charge which builds up on said parts and said medium during tumbling causing said parts to be repelled from said medium;

exhaust means from said chamber.

4,551,950
TRUING APPARATUS FOR A GRINDING WHEEL WITH ROUNDED CORNERS

Kunihiko Unno; Toshio Tsujiuchi, and Yukio Oda, all of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 26, 1984, Ser. No. 634,430
Claims priority, application Japan, Aug. 2, 1983, 58-141296
Int. Cl.[4] B24B *53/14*
U.S. Cl. 51—165.87 **3 Claims**

1. A truing apparatus for truing a grinding wheel having a rounded corner, comprising:

(a) truing tool;

(b) tool support means for suppoting said truing tool and movable radially and axially of the grinding wheel;

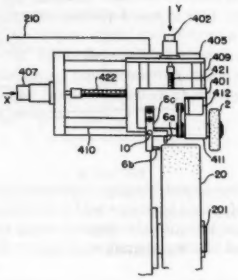
(c) feed drive means for moving said tool support means radially and axially of the grinding wheel;

(d) first feed control means for controlling said feed drive means to move said truing tool along a predetermined path;

(e) contact means attached to said tool support means for contacting said grinding wheel in radial and axial directions thereof;

(f) contact detecting means for detecting a contact between said contact means and said grinding wheel;

(g) second feed control means for controlling said feed drive means to move said contact means to approach outer peripheral and end surfaces of the grinding wheel until said contact detecting means is actuated immediately after one truing process and immediately before a next truing process;



(h) grinding wheel position detecting means for detecting radial and axial positions of the grinding wheel when said contact detecting means is actuated immediately after said one truing process and immediately before said next truing process; and

(i) correcting means for correcting said path given by said first feed control means based on the radial and axial positions of the grinding wheel which are detected by said grinding wheel position detecting means.

4,551,951

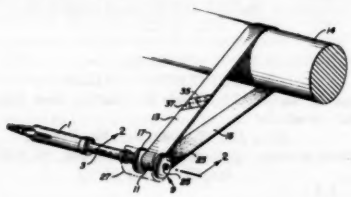
DETACHABLE PORTABLE CONTINUOUS-BELT DRIVING HEAD

Robert J. Nace, Kingsville, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 24, 1984, Ser. No. 603,275

Int. Cl.[4] B24B *21/02, 23/06*

U.S. Cl. 51—170 EB **4 Claims**



1. A detachable portable rotatable driving head for driving a continuous grinding belt over a shaft surface comprising:

(a) a cylindrical rotatable drive head concentrically connected to a rotatable spindle, the drive head including:

(i) a cylindrical rubber-coated drum portion threadably connected to the spindle;

(ii) a first sideguard concentrically spaced about the spindle between one end of the drum and a stop flange on the spindle;

(iii) a washer between the drum and first side guard;

(iv) a second sideguard threadably fastened to another end of the drum; and

(v) a continuous grinding belt carried on the drum and around the shaft.

4,551,952

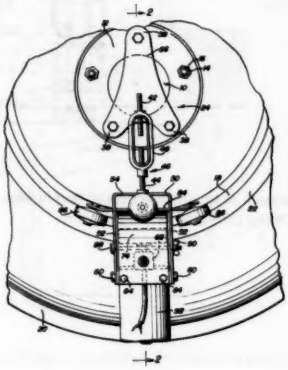
TIRE SIDE WALL CLEANER

James C. West, Galveston, Tex., assignor to Joe Collis Cochrane, Galveston, Tex., a part interest

Filed Jun. 9, 1983, Ser. No. 502,605

Int. Cl.[4] B24B *19/00*

U.S. Cl. 51—241 S **9 Claims**



1. A tire side wall cleaner-buffer including a mount provided with support means for support of said mount from a vehicle wheel having a tire mounted thereon, elongated arm means, connecting means mounting one end of said arm means from said mount for angular displacement relative thereto about an axis extending transverse to said arm means and for at least limited angular displacement of said arm means relative to said mount about an axis transverse to said arm means and the first-mentioned axis, rotary abrasive wheel means journalled from the other end of said arm means for rotation about an axis generally parallelling said arm means, said arm means including adjustment means for adjusting the effective length of said arm means intermediate said connecting means and rotary abrasive wheel means.

4,551,953

MACHINE TOOL WITH DETACHABLE TOOL SHIELDING MEANS

Willi Lewandowski, Glinde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,048

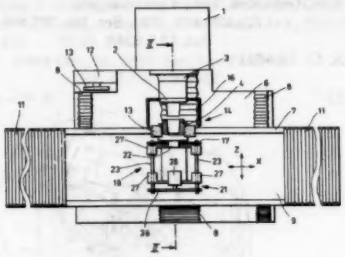
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3320952

Int. Cl.[4] B24B *55/04*

U.S. Cl. 51—268 **17 Claims**

1. In a machine tool, such as a grinding machine, the combination of a frame; a tool holder in said frame; a protective enclosure provided on the frame for the tool on said holder; a tool changing device provided on said frame; means for effecting a relative movement between said device and said holder so that said device can assume with reference to said holder a tool changing position in which a tool can be transferred between said device and said holder; and means for temporarily

supporting at least a portion of said enclosure during transfer of tools between said device and said holder in a predetermined



position such as to afford access to said holder, said supporting means being provided on said device.

4,551,954

METHOD FOR CONTROLLING A GRINDING STROKE IN A GEAR TOOTH FLANK GRINDING MACHINE

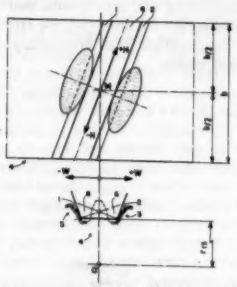
Peter Bloch, Mutschellen, and Robert Wydler, Zürich, both of Switzerland, assignors to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Mar. 5, 1984, Ser. No. 586,327

Claims priority, application Switzerland, Mar. 11, 1983, 1338/83

Int. Cl.⁴ B24B *55/02*

U.S. Cl. 51—287 **6 Claims**



1. A method for controlling a grinding stroke (H) of a gear tooth flank grinding machine operating on an indexing generating principle and having at least one dished grinding wheel with an effective radius (R_S) reciprocatably movable in grinding strokes along generatrices of involute gear tooth flanks to perform a machining of each such gear tooth flank and wherein a grinding stroke (H) is greater than lengths of the generatrices by the amount of a supplemental dimension, comprising the steps of:

performing a measurement of said effective radius (R_S) of said at least one grinding wheel at least once during said machining of each gear tooth flank; and

reducing said grinding stroke (H) of said at least one grinding wheel in correspondence to a gradual reduction of said effective radius (R_S) detected by said measurement.

4,551,955

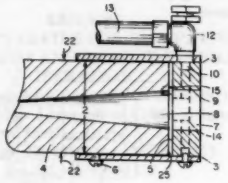
SAND BLASTING APPARATUS

Henry E. Zion, Jr., 31 Bedford St., Middleboro, Mass. 02346

Filed Oct. 11, 1983, Ser. No. 540,844

Int. Cl.⁴ B24C *5/04*

U.S. Cl. 51—439 **4 Claims**



1. An improved sand blasting apparatus of the type fitted over the end of a sand blasting tool for forming around a sand jet coming from the tool a thin water cocoon to eliminate sand dust during sand blasting operations, wherein the improvement comprises:

a hollow casing having an outside, an inside and two ends, one end into which a sand blasting tool is inserted, and said casing having an inner diameter approximately equal to the outer diameter of the sand blasting tool;

a water fitting mounted on the outside of said casing at the end opposite to that end of the casing into which the sand blasting tool is inserted, penetrating through to the inside of the casing, and adapted to receive a convenient conduit for supplying water to the inside of the casing;

a disk concentrically mounted within the said casing at the end with the said water fitting, having an axial bore through which the sand jet from the sand blasting tool passes, having an annular, concentric groove about its circumference aligned with the water fitting, having a plurality of chamber cavities juxtaposed on either side of the disk's axial bore and opening onto the face of the disk which nearly touches the sand blasting tool and having a depth sufficient to reach the side of the groove farthest away from the sand blasting tool, and to which the sand blasting tool is so inserted in the casing that it nearly touches; and

a plurality of holes in the casing located generally at the junction of the disk and the sand blasting tool.

4,551,956

GUTTERING SYSTEM

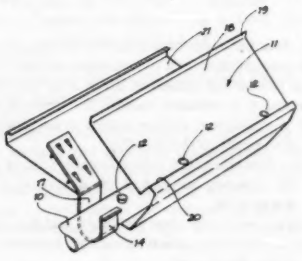
Wayne L. Axford, 19 Blanch St., Oatley, New South Wales, 2223, Australia

Filed Jul. 18, 1983, Ser. No. 514,880

Claims priority, application Australia, Jul. 19, 1982, 4937

Int. Cl.⁴ E04D *13/00*

U.S. Cl. 52—12 **11 Claims**



1. A gutter system comprising: a plurality of support brack-

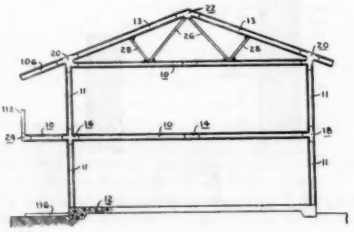
ets each including an attachment portion at one end for attachment to roof structure, a support edge at the other end and a generally "U"-shaped support portion therebetween in proximate said other end; a conduit for liquid transportation supported by said support brackets within said "U"-shaped support portions; a sheet metal outer shell portion wrapping around said support brackets and conduit and supported at an outer longitudinally running ridge by said support brackets at least at their support edges; a shallow channel portion formed longitudinally along an upper portion of said outer shell portion and adapted to receive water runoff from a building roof and to channel the water therealong between a plurality of substantially spaced apart liquid communication means providing drainage of water from said shallow channel portion to said conduit.

4,551,957

BUILDING CONSTRUCTION

Herbert R. Madray, P.O. Box 712, Okeechobee, Fla. 33472

Filed May 23, 1983, Ser. No. 496,960
Int. Cl.⁴ E04B *7/02*
U.S. Cl. 52—90 **18 Claims**



1. An improved system for constructing primary load-bearing frame structures for buildings and the like on a foundation, with prefabricated sets of interconnectable girder members, connecting plate members and attachment members for selectively securing the girder and plate members to one another, the improvement comprising:

the girder members being prefabricated in a plurality of incrementally different lengths and having flanges and webs forming channel-shaped cross-sections of uniform web width, at least some of the girder members being vertically-oriented;

each of the connecting plate members being prefabricated with flanges to form at least two angularly related receiving channels of uniform web width and cross-section and in a plurality of relative angles, the respective web widths of each girder and each receiving channel being dimensioned to enable portions of each to nest snugly one inside the other, primary loads being borne by and transmitted between the girder and plate members in planes defined by the nested webs, the flanges of the nested ends bearing against one another to provide high rotational rigidity and overall frame stiffness;

the set of attachment members being insertable through apertures in and engageable with nested portions of both the girder and plate members to provide full surface engagement of the nested web portions, whereby a plurality of frame structures for buildings, of varied size and shape, may be easily constructed from sets of prefabricated girder members and prefabricated connecting plate members secured together by a set of standard attachment members; and,

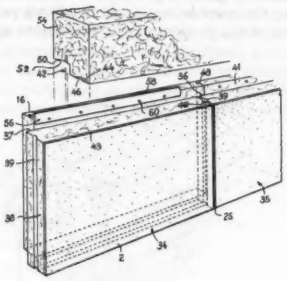
means for securing the vertically-oriented girder members to the foundation.

4,551,958

EXTERIOR INSULATING ELEMENT AND CLADDING EMPLOYING SUCH ELEMENTS

Patrick Reneault, Garches, and Francis Ovaert, Paris, both of France, assignors to SMAC Acieroid, Paris, France

Filed Jan. 19, 1983, Ser. No. 459,245
Claims priority, application France, Jan. 22, 1982, 82 00980
Int. Cl.⁴ E04C *2/20*
U.S. Cl. 52—309.4 **18 Claims**



1. An assembly of adjacent similar elements in a substantially vertical plane, each element providing an exterior insulation for a wall, said element comprising a rectangular panel composed of a heat insulating foam material substantially impermeable to water and water vapour and having a good strength and good thermal performances in a humid environment, the element having two sides and four edges, a facing layer which resists penetration of running water but is not necessarily fully impermeable to humidity and is provided on a first of said sides, which first side is for constituting an outer side of said element when said element is combined with said wall, the four edges of the element each comprising a longitudinal groove and having, in the vicinity of a rear side of said element opposedto said first side, a length (A, C) exceeding to a given extent the length (B, D) of said first side, whereby each edge is in fluidtight contact with the edge of an adjacent similar element adjacent said rear side but said given extent being such that the edge remains spaced from the edge of said adjacent similar element adjacent said first side and forms gaps which are narrow relative to a depth of the gaps,measured from said facing layer and the grooves are all open through said gaps between said similar elements only on said first side, and means defining decompression chambers provided in said edges defining said gaps between adjoining ones of said similar elements and spaced from said first side of each of said similar elements.

4,551,959

BUILDING BLOCK

Donald T. Schmid, 10835 Park Ave., Clarence, N.Y. 14031

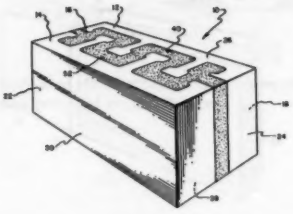
Filed Oct. 19, 1983, Ser. No. 543,175
Int. Cl.⁴ E04C *1/00*
U.S. Cl. 52—309.12 **9 Claims**

1. A building block having two opposite and parallel sidewalls and two opposite and parallel ends, said sidewalls and said ends being generally perpendicular to one another, said building block comprising:

two spaced block parts extending along the length of the block sidewalls so that each block part defines at least a portion of a corresponding one of the block sidewalls, each of said parts having an inner surface defining a side of the space between said block parts and including at least three substantially planar projections projecting toward the inner surface of the other of said two parts so that the plane of each projection is oriented substantially parallel to the block ends and so that portions of the inner surfaces of said block parts are defined by the surfaces of said

projections, each projection of said block part being spaced from an adjacent projection of its corresponding block part a distance no greater than about one-third the length of each block sidewall and defining an enlarged end portion, said projecting portions of each of said parts being so arranged in relationship to the projecting portions of the other of said parts that the space defined therebetween is generally serpentined in cross section as viewed in a plane oriented perpendicular to the block ends and sidewalls; and

an insulating portion positioned within and substantially filling the space between said two block parts so that said enlarged end portions of said projections are in interlock-



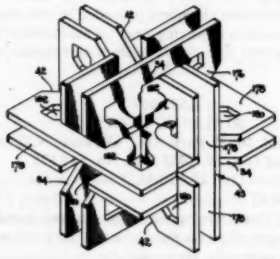
ing relationship with said insulating portion and said block parts are thereby securely interconnected with one another, the inner surface of one block part engaging a corresponding surface of an insulating portion over an area which is at least twice as large as the area of the block sidewall defined by said one block part and the inner surface of the other block part engaging a corresponding surface of an insulating portion over an area which is at least twice as large as the area of the block sidewall defined by said other block part so that the engagement between said block parts and said insulation portion contributes effectively to the structural integrity of said block as a unit.

4,551,960

SPACE FRAME STRUCTURAL SYSTEM

Gregg R. Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034

Filed Feb. 14, 1983, Ser. No. 466,102
Int. Cl.[4] E04H *12/00*
U.S. Cl. 52—648 **41 Claims**



1. A three dimensional nodal connector for securing one or more struts extending between the nodal connector and another like nodal connector, said nodal connector comprising:

(a) six flat plates and each of said plates capable of being identical in size to one another and each having identical peripheral and interior shapes,

(b) each of said plates being shaped for enabling said plates to be interfitted together as three pairs in three substantially mutually perpendicular planes relative to one another and with the plates of each pair being facewise disposed to one another to form a relatively solid and relatively rigid three dimensional nodal connector, and

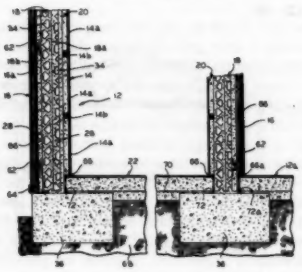
(c) connection means on each of said plates forming connection regions in each of said pairs in said three substantially mutually perpendicular planes to enable struts to be removeably connected to said nodal connector.

4,551,961

METHOD OF CONSTRUCTING A MODULAR UNIT

Donald L. Kiselewski, 4705 Holly Dr., Palm Beach Gardens, Fla. 33410

Filed Feb. 28, 1983, Ser. No. 470,160
Int. Cl.[4] E04B *1/16*
U.S. Cl. 52—743 **18 Claims**



1. A method of constructing a modular structure, comprising the steps of:

providing an inner and outer panel and a perforated stud having first and second portions including respective engagement means;

securing said inner panel to one of said first and second portions of said perforated stud and securing said outer panel to the other of said first and second portions of said perforated stud;

positioning said inner and outer panels in spaced parallel relationship with said first and second portions of said perforated stud in confronting relatively movable relationship

applying a force to said inner and outer panels of said wall to urge said inner and outer panels apart for engagement of said respective engagement means of said first and second portions of said perforated stud to form a wall having a cavity therein;

maintaining a force on said inner and outer panels of said wall to keep said respective engagement means of said first and second portions of said perforated stud in engagement thereby maintaining said inner and outer panels in spaced apart relationship by a preselected distance to define a stay-in-place form; and

permanently and interlockingly engaging and encasing said first and second portions of said perforated stud by pouring concrete into said cavity to flow through said perforated stud between said inner and outer panels of said wall to rigidize said modular structure;

whereby said modular structure may be constructed by performing said securing step at one location, performing said positioning step at another location, and performing said forcing and pouring steps at still another location.

4,551,962
WEIGHING AND PACKING APPARATUS

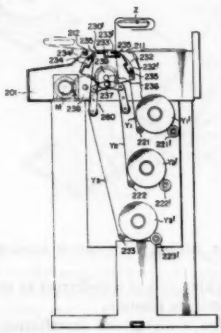
Kazuto Kawahara, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,719

Claims priority, application Japan, Sep. 25, 1981, 56-142743[U]; Sep. 25, 1981, 56-142744[U]; Sep. 30, 1981, 56-145298[U]; Nov. 30, 1981, 56-178608[U]; Dec. 19, 1981, 56-190129[U]; Dec. 19, 1981, 56-190131[U]; Mar. 5, 1982, 57-31081[U]

Int. Cl.⁴ B65B *61/00*

U.S. Cl. 53—131 **47 Claims**



1. A weighing and packing apparatus comprising:

(a) at least two rolls of film;

(b) a table wherein said table comprises a film outlet for receiving film from one of said rolls;

(c) a weighing mechanism comprising a weighing plate positioned in front of said film outlet in said table, said weighing mechanism being incorporated into said table;

(d) a slack prevention means for preventing any slack in said film as said film is drawn from said roll to said film outlet;

wherein said table further comprises side walls, film retainer comprising a plurality of film receivers for receiving adjacent films from said film rolls, a rotating means for rotating said film retainer, and a positioning means for positioning a desired film receiver to face said film outlet, wherein said film retainer is positioned between said side walls and is provided at its circumference with said plurality of film receivers to receive the end of said film from one of said rolls so that upon rotation of said retainer the distance between at least some of said adjacent films is reduced; wherein said table further comprises a means for enlarging said reduced distance between adjacent films in response to the rotation of said film retainer by said rotating means, wherein said means for enlarging the distance between adjacent films prevents said films from contacting or adhering to each other and enlarges said reduced distance between the adjacent films.

4,551,963
AUTOMATIC SEPARATOR DEVICE FOR FILLING BOXES WITH TUBES

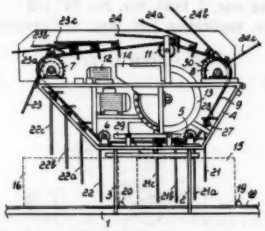
Pierfrancesco Nicolo, Sordevolo, Italy, assignor to C.M.T. San Grato S.r.l., Sordevolo, Italy

Filed Jun. 28, 1982, Ser. No. 393,152

Int. Cl.⁴ B65B *19/34*

U.S. Cl. 53—148 **5 Claims**

1. An automatic transfer device for filling tubular bodies in parallel arrangement into boxes carried by a conveyor unit, comprising a drum-like member arranged above said conveyor unit for rotation around a substantially horizontal rotation axis, said drum-like member having an outer peripheral surface parallel to said rotation axis, said outer peripheral surface having peripheral containment formations extending parallel to each other and to said rotation axis for receiving therein and transferring therefrom said tubular bodies into said boxes, while maintaining said tubular bodies in a substantially horizontal position, endless entrainment means extending around said drum-like member at a distance therefrom and lying in a plane transverse to said horizontal rotation axis, said entrainment means comprising a pair of parallel chains in endless loop configuration each defining an upper stringer extending substantially above said drum-like member and a lower stringer extending substantially underneath and laterally to said drum-like member and inclined stringers connecting said first and second stringers, the chains of said pair of chains extending parallel at a distance from each other, a set of paddles hingedly connected on and between said chains for freely hanging by gravity vertically downwards from said lower stringers and for pivoting over each other at said upper stringers of said parallel chains, support members rigid with said paddles at a



peripheral edge thereof, each of said paddles having a hinge mechanism defining a hinge axis extending parallel to said horizontal axis through said support member, each of said paddles having near said support members at least one shoe element rigid therewith in the form of a bar extending transverse to said paddles, means for pivoting said paddles as they move onto said upper stringer, motor means for moving said entrainment means in synchronization with and with said lower stringer chain in the direction of said flat conveyor unit, thereby said vertically hanging paddles at said lower stringer of said parallel chains progressively entering said boxes for dividing said boxes into temporary bins formed between consecutive vertically hanging paddles, each said bin being progressively advanced under said drum-like member untill completion of filling with said tubular bodies, said vertically hanging paddles being progressively removed from said boxes after completion of said filling and pivoting over each other when reaching said upper stringer position.

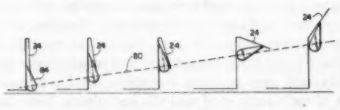
4,551,964
PACKING CASE TAB SLITTER

Lloyd D. Johnson, Portland, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Division of Ser. No. 254,638, Apr. 16, 1984, , which is a division of Ser. No. 75,324, Sep. 12, 1979, Pat. No. 4,291,518. This application Nov. 30, 1984, Ser. No. 677,317

Int. Cl.⁴ B65B *7/20*

U.S. Cl. 53—374 **8 Claims**



1. In apparatus for moving the front and rear top flaps of an upwardly open packing case away from their folded positions alongside the front and rear end panels of a packing case while the case is moving, said apparatus including conveyor means for moving the case in a horizontal path, the improvement

comprising transversely opposed flap folding chains, said chains provided on either side of said case path, and having active runs moving downstream at the same horizontal speed as that of the cases, at least one flap engageable tucker provided pivotally on each chain and cam track means for engaging portions of said flap tuckers, portions of said tuckers moving upwardly into the path of said cases as the tucker moves in the downstream direction to selectively contact the case front and rear end walls for locating the case therebetween and for folding the front and rear top flaps of the case.

4,551,965

WELDING AND SEPARATING APPARATUS FOR PLASTIC FILMS

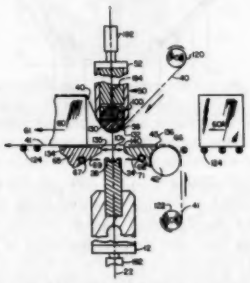
Manfred Prottengeier, Norderstedt, Fed. Rep. of Germany, assignor to Doboy Verpackungsmaschinen GmbH, Schenefeld, Fed. Rep. of Germany

Filed Apr. 5, 1984, Ser. No. 597,165

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1983, 3312314

Int. Cl.⁴ B65B *51/14*

U.S. Cl. 53—463 **21 Claims**



1. Apparatus for welding and separating stacked plastic films which have opposite side edges, said apparatus comprising:

a welding and separating strip positioned substantially normal to said stacked plastic films, said strip being formed to have a separating member and two welding members positioned proximate to and on opposite sides of said separating member, said separating member and two welding members extending between opposite side edges of said stacked plastic films, and said strip including means to heat said separating member and said two welding members;

a counterpressure element mounted to be opposite said separating member and two welding members with said stacked plastic films therebetween which element is formed of a resilient material to extend between opposite side edges of said stacked plastic films and which element is sized to contact said separating member and two welding members;

means to move said welding and separating strip and said counterpressure element selectively or together to press said separating member and two welding members against said counterpressure element to cause preselected deformation thereof so that, with said stacked plastic films positioned between said separating member and two welding members and said counterpressure element, said separating member separates said stacked plastic films into sections having transverse edges and substantially simultaneously said two welding members weld the transverse edges of each section of said stacked plastic films into one transverse edge; and

wherein said two welding members are sized and formed to contact said counterpressure element and hold said stacked plastic films substantially immobile thereagainst as said welding members are welding and as said separating member is separating.

4,551,966

APPARATUS FOR STORING INFORMATION STORAGE MEDIUMS INTO CASINGS

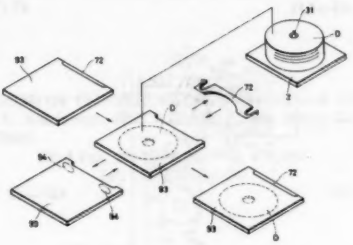
Shigeyuki Aoyagi, Yokohama, and Mamoru Watanabe, Sagamihara, both of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Jun. 8, 1982, Ser. No. 386,788

Claims priority, application Japan, Jun. 10, 1981, 56-89367

Int. Cl.⁴ B65B *5/04, 43/44*

U.S. Cl. 53—571 **20 Claims**



1. An apparatus for storing information storage discs in casings, comprising:

(a) first means for picking up and transferring an information storage disc to a storage position;

(b) second means for stocking and transferring a casing composed of a sleeve and a removable lid plate inserted therein to said storage position;

(c) third means for holding said casing in said storage position, said third means comprising a casing holder mechanism for holding said casing as fed to said storage position, a lid plate remover for removing said lid plate from said sleeve as supported by said casing holder mechanism, said lid plate remover comprising a remover plate, engagement means mounted on said remover plate for lockingly engaging said lid plate and actuating means for actuating said engagement means, and pulling means for pulling said lid plate engaged to said engagement means out of said sleeve;

(d) means for moving said first and third means relative to each other for inserting said information storage disc into said sleeve in said storage position with said lid plate removed from said sleeve by said lid plate remover means;

(e) means for moving said casing holder mechanism with respect to said lid plate remover for inserting said lid plate into said sleeve to provide a completed assembly of said casing and said information storage disc contained therein; and

(f) fourth means for stocking and discharging said completed assembly.

4,551,967

COMBINATION LAWNMOWER AND EDGER

Joseph S. Murcko, 744 Annsway, Vista, Calif. 92083

Filed Mar. 4, 1985, Ser. No. 708,062

Int. Cl.⁴ A01D *53/14*

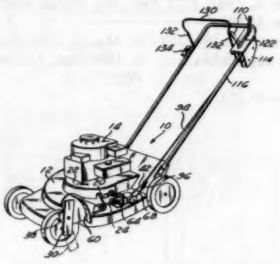
U.S. Cl. 56—13.7 **14 Claims**

1. In the combination of a lawnmower and edger, the lawnmower having a rotary grass-cutting blade supported by a vertical shaft and the edger having a rotary edging blade supported by a horizontal shaft, a motor powering said shafts, a lawnmower body supporting said shafts, and a guiding handle attached to and rising from said body, the improvement, comprising:

(a) a lever pivotally mounted on an upper portion of said guiding handle and a flexible tension member having its upper end connected to said lever, the lower end of said flexible tension member having edger lowering means and braking and belt tightening means, an arm supporting said

horizontal shaft and pivotally movable between a first inoperative upper edger position and a second operative lower edger position and spring means normally biasing said arm to its first inoperative upper edger position and said flexible tension member pulling said arm to said second operative lower edger position as said lever is operated, and

(b) a pulley on said horizontal shaft and a pulley on said vertical shaft and belt means connecting said pulleys and



an idler belt tightening pulley engaging said belt means and a brake engageable with said belt means and said braking and belt tightening means being connected to said idler pulley and to said brake and spring means normally biasing said brake to operative position thereof and normally biasing said idler pulley to belt loosening position and said flexible tension member pulling said brake to inoperative position thereof and pulling said idler pulley to belt tightening position thereof as said lever is operated.

4,551,968

METHOD AND APPARATUS FOR KILLING FIELD WEEDS

Bengt A. Samuelsson, Torpa, 590 30 Borensberg, Sweden

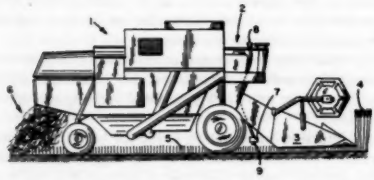
PCT No. PCT/SE81/00338, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/01977, PCT Pub. Date Jun. 24, 1982

PCT Filed Nov. 20, 1981, Ser. No. 406,229

Claims priority, application Sweden, Dec. 8, 1980, 8008603

Int. Cl.[4] A01D *75/18*

U.S. Cl. 56—16.4 **3 Claims**



3. Apparatus for killing field weeds such as root weeds, couch and the like, by means of liquid weed killer during harvesting of crops, said apparatus comprising:

a self-propelled, motor-driven harvester combine having a front cutting device, means for loading the crop onto a conveyor for carrying the crop upwardly to a threshing apparatus, and means for ejecting the threshing residues onto the field rearwardly of the threshing apparatus through a crop residue ejecting opening, and liquid weed killer storage means; and

an elongated liquid weed killer applicator means arranged transversely of the direction of travel of the harvester combine and extending across at least the width of the harvester combine and in communication with said liquid weed killer storage means, said applicator means including a tubular distribution member divided into at least two sections each having discharge nozzles, said distribution member positioned between said front cutting device and said crop residue ejection opening, said tubular sections each extending transversely of the direction of travel of the harvester combine, and control means for selectively engaging and disengaging the applicator means from the liquid weed killer storage means, said control means selectively and intermittently operable to cause liquid weed killer to spray through desired discharge nozzles prior to deposit of crop residue onto the crop field in order to apply to the cut area the liquid weed killer in a check pattern depending on the occurrence of weeds.

4,551,969

APPARATUS FOR CONTROLLING THE WINDING SPEED OF ROVING IN ROVING FRAME

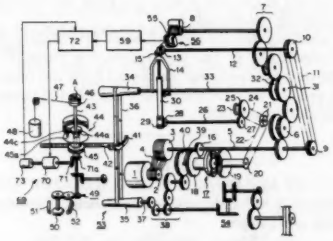
Takashi Kogiso, Mizunami; Katsutoshi Kishi, Gifu, and Hachirou Yokoyama, Aichi, all of Japan, assignors to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 30, 1984, Ser. No. 635,892

Claims priority, application Japan, Aug. 2, 1983, 58-141300; Nov. 22, 1983, 58-220087

Int. Cl.[4] D01H *1/26, 13/32*

U.S. Cl. 57—264 **5 Claims**



1. An apparatus for controlling the winding speed of a roving in a roving frame during a winding operation, which comprises means for detecting the positions of said roving with respect to the vertical direction during vibration created in the portion of said roving suspended between a front roller of a drafting device of said roving frame which delivers said roving and a top of a flyer which performs said winding operation and outputting signals representing values corresponding to said detected positions, means for computing an average central position of said roving in the vertical direction during vibration from the values output by said roving position detecting means, means for computing a correction amount for the rotation speed of a bobbin associated with said flyer, said correction amount being computed from the difference between said average central position and a desired position for controlling the roving winding speed, means for generating a correction signal corresponding to the correction amount computed, and a device for changing the rotation speed of said bobbin in accordance with said correction signal.

4,551,970
APPARATUS FOR THE FALSE TWISTING OF THREADS USING FRICTION DISKS

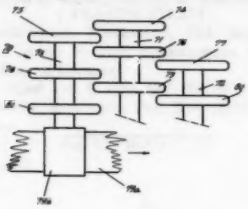
Kirit Patel, Elfershausen, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,151

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323543

Int. Cl.⁴ D01H *7/92*; D02G *1/04*

U.S. Cl. 57—339 **13 Claims**



1. A device for false-twisting thread comprising:

three rotatable parallel shafts, each shaft defining a respective corner of a triangle, each of the shafts having an inlet end disposed in an inlet direction for defining an inlet for entering thread and an outlet end disposed in an outlet direction opposite the inlet direction for defining an outlet for exiting thread; the shafts defining a thread path between them for passing thread from the inlet to the outlet;

drive means for rotating the shafts;

a first inlet guide disk on a first one of the shafts at the inlet end thereof for rotating with the first shaft for guiding the entering thread into the thread path;

a second inlet guide disk on a second one of the shafts at the inlet end thereof for rotating with the second shaft and positioned in the outlet direction from the first guide disk for guiding the thread; and

a first working disk on the first shaft for rotating therewith and positioned in the outlet direction from the second guide disk for receiving the thread from the second guide disk and for false-twisting the thread as the thread passes along the thread path.

4,551,971
BOOSTING APPARATUS FOR TURBO-JET ENGINE

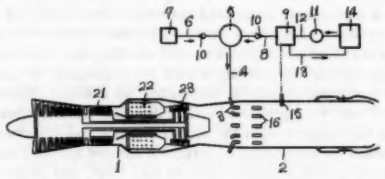
Satoru Suzuki, 1 Mikatabara-Cho 536 Banchi, Hamamatsu-Shi, Shizuoka-pref., Japan

Filed May 4, 1984, Ser. No. 607,236

Claims priority, application Japan, May 14, 1983, 58-72114[U]

Int. Cl.⁴ F02K *3/10*

U.S. Cl. 60—39.53 **2 Claims**



1. In a turbo-jet engine having a gas turbine including a compressor, combustor and a gas turbine rotor, and an after burner connected to the downstream side of said gas turbine as viewed in the direction of flow of the combustion gas,

a boosting apparatus for the turbo-jet engine characterized by comprising a means for atomizing a mixture of a fuel and an aqueous solution of methanol only into said after burner.

4,551,972
ENGINE MANAGEMENT SYSTEM

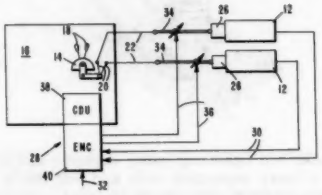
Leon D. Lewis, Rancho Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

PCT No. PCT/US80/01065, § 371 Date Mar. 4, 1982, § 102(e) Date Mar. 4, 1982, PCT Pub. No. WO82/00687, PCT Pub. Date Mar. 4, 1982

Continuation of Ser. No. 358,931, Mar. 4, 1982, abandoned. This PCT application Aug. 21, 1980, Ser. No. 664,949

Int. Cl.⁴ F02C *9/28*

U.S. Cl. 60—39.281 **20 Claims**



1. An engine management system for an aircraft having at least one engine, said engine management system having a plurality of operating modes corresponding to a plurality of flight modes of said aircraft, said engine management system comprising:

throttle means including throttle lever means movable over a range of positions for commanding corresponding rates of fuel flow to said engine;

fuel metering means operably connected to said throttle lever means and responsive thereto for providing said corresponding rates of fuel flow to said engine;

link means having a variable dimension adjustable over a predetermined range, said link means being operably interposed between said throttle means and said fuel metering means for selectively modifying the rate of fuel flow provided by said fuel metering means in response to a position of said throttle lever means, the rate of fuel flow provided by said fuel metering means corresponding to the rate of fuel flow commanded by said throttle lever means whenever said link means dimension is of a preset value in said predetermined range;

means for receiving parametric inputs representing desired engine performance characteristics, said parametric inputs including at least one of engine speed and engine turbine temperature;

means for selecting an operating mode for said engine management system corresponding to one of said flight modes of said aircraft, one of said operating modes being a go around mode;

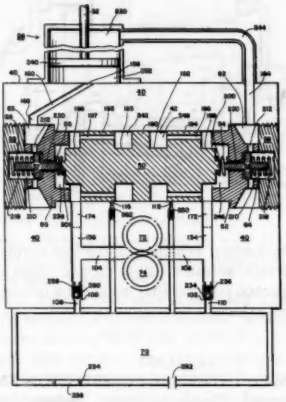
link control means drivingly connected to said link means for controllably regulating said link means dimension and thereby selectively modifying said rate of fuel flow;

means for energizing said link control means to modify said rate of fuel flow to the extent necessary to achieve at least one of said desired engine performance characteristics, said energizing means energizing said link control means and thereby modifying said rate of fuel flow in response to said parametric inputs, said actual engine and aircraft performance characteristics, and said selected operating mode, said energizing means causing said link control means to bring said link means to said preset value whenever said engine management system is placed in said go around mode.

4,551,973
HYDRAULIC POWER SOURCE AND VALVE THEREFOR

James H. Broadhead, Bay Minette, Ala., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 28, 1982, Ser. No. 437,230
Int. Cl.[4] F16D 31/02
U.S. Cl. 60—477 13 Claims



1. A hydraulic power source adaptable for attachment to a motor, a reservoir of hydraulic fluid, and a double-acting piston/cylinder assembly, capable of providing hydraulic power to a selected side of the piston/cylinder assembly solely by selecting the direction of operation of the motor, comprising:

(a) a valve body, having a cylindrical bore therethrough;

(b) a valve assembly, disposed in the cylindrical bore, comprising, in axial alignment:

(i) a double-acting cylindrical plunger, movable axially in the cylindrical bore between a central position and a valve-opening position on either side of the central position, the plunger having a solid central portion, a pair of annularly recessed portions, one on either side of the central portion, a pair of non-recessed portions, one disposed axially outwardly of each recessed portion, and a pair of reduced diameter valve-opening portions, one extending axially outwardly from each non-recessed portion, each of the non-recessed portions having a plunger conduit therethrough connecting a space about the adjacent annularly recessed portion with a headspace about the adjacent valve-opening portion,

(ii) a pair of springs, one associated with and disposed about each valve-opening portion to urge the plunger to its central portion in the bore,

(iii) a pair of spring housings, one associated with and disposed axially outwardly of each spring to retain it and each having a housing conduit axially therethrough, and

(iv) a pair of check valves, one associated with each housing conduit, and each being biased closed to prevent flow axially inwardly through the housing conduit, each being openable by the corresponding valve-opening portion of the plunger when the plunger is in its valve-opening position with respect to that check valve;

(c) a pair of cylinder conduits, one associated with and connected at one end thereof to each housing conduit on that side of the check valve associated therewith remote from the headspace, and adapted to be connected at the other end thereof to one side of the piston/cylinder assembly;

(d) a pair of supply conduits, one associated with and connected at a first end thereof to each headspace through the cylindrical bore such that the conduit is open to the headspace when the plunger is in other than the valve-opening position with respect to the check valve associated with that headspace, and adapted to be connected at a second end thereof to the reservoir, each supply conduit having therein a supply check valve, the supply check valve being normally biased closed to prevent flow through the supply conduit to the reservoir;

(e) a pair of return conduits, one associated with and connected at a first end thereof to the space surrounding each annularly recessed portion through the cylindrical bore such that the conduit is open to the space only when the plunger is in the valve-opening position with respect to the check valve nearer the return conduit, and adapted to be connected at a second end thereof to the reservoir, each return conduit having therein a return check valve, the return check valve being normally biased closed to prevent flowthrough the return conduit away from the reservoir;

(f) a cross-flow conduit joining the pair of supply conduits at a point in each which is between the supply check valve and the first end; and

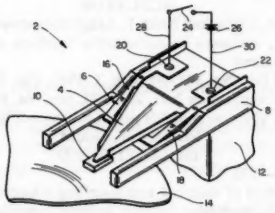
(g) a reversible pump intersecting the cross-flow conduit and adapted for connection to the motor, the pump being capable of pumping hydraulic fluid in either direction through the cross-flow conduit in response to the direction of operation of the motor;

whereby operation of the motor in a selected direction causes axial displacement of the plunger in the bore from its central position toward a valve-opening position, thereby causing the valve assembly to permit hydraulic fluid flow only in a desired direction and thus operate the piston/cylinder assembly in a direction corresponding to the selected direction.

4,551,974
SHAPE MEMORY EFFECT ACTUATOR AND METHODS OF ASSEMBLING AND OPERATING THEREFOR

John R. Yaeger, Sunnyvale, and Robert K. Morgan, Pleasant Hill, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 27, 1984, Ser. No. 604,784
Int. Cl.[4] F03G 7/06
U.S. Cl. 60—527 21 Claims



10. A shape memory effect actuator comprising:

a biasing means, said biasing means being normally biased in a first position and capable of being moved to a second position;

an actuator element cooperatively engaged with said biasing means;

said actuator element having a first position and a second position corresponding to said first and second positions of said biasing means;

said actuator element comprising a shape memory alloy having a martensitic condition and an austenitic condition;

in said first position said actuator element is in the martensitic condition and is biased in said first position by said biasing means;

in said second position said actuator element biases and retains asaid biasing means in said second positon; said actuator element being in the martensitic condition when moved to said second position by manual manipulation and in the austenitic condition when moved to said second position by the shape memory effect.

4,551,975

ACTUATOR

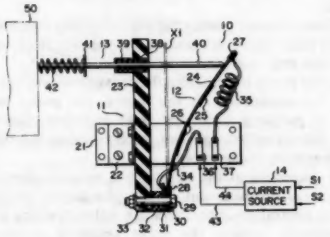
Masao Yamamoto, Tokyo, and Tetsuo Fujiwara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1984, Ser. No. 681,126

Claims priority, application Japan, Feb. 23, 1984, 59-31367; Mar. 7, 1984, 59-41907; Sep. 29, 1984, 59-204884

Int. Cl.⁴ F01K *7/06*

U.S. Cl. 60—528 **8 Claims**



1. An actuator wherein an operation stroke is obtained by a shape memory element having an alloy member made of a shape memory alloy for recovering a memory shape when said alloy member is heated, and shape recovery control of said shape memory element is performed by Joule heat generated by a current supplied to said alloy member, characterized in that said shape memory element comprises means for decreasing an electrical resistance of at least one portion of said alloy member, the electrical resistance of said at least one portion being lower than that of any other portion thereof.

4,551,976

SHIPPING AND INSTALLATION STRAP FOR LINEAR ACTUATOR

Richard Nix, Utica, and Keith V. Leigh-Monstevens, Troy, both of Mich., assignors to Automotive Products plc, Warwickshire, England

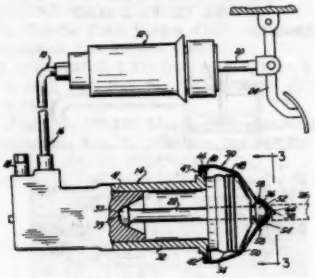
Division of Ser. No. 344,495, Feb. 1, 1982, Pat. No. 4,454,632. This application Nov. 28, 1983, Ser. No. 555,602

The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.

Int. Cl.⁴ F15B *7/00*

U.S. Cl. 60—533 **4 Claims**

1. A method of shipping and installing a hydraulic actuator for remotely operating a motor vehicle component, said hydraulic actuator forming part of an apparatus comprising a master cylinder, said hydraulic actuator and a conduit connecting said master cylinder and said hydraulic actuator, said hydraulic actuator having a housing and an output member movable relative to said housing from a first position to a second position, wherein said hydraulic actuator output member is connectable to an operating member of said motor vehicle component while in said first position, said method comprising restraining said hydraulic actuator output member in said first position by means of a strap having an end attached to said hydraulic actuator housing and another end attached to a portion of said hydraulic actuator output member, prefilling said apparatus with hydraulic fluid prior to shipment of said apparatus, shipping said apparatus with said strap maintaining said hydraulic actuator output member in said first position, and installing said apparatus on a motor vehicle while maintaining said hydraulic actuator output member in said first position by means of said strap, whereby said strap is adapted to maintain said hydraulic actuator output member in said first position during shipment of said apparatus and installation of



said apparatus on a motor vehicle and to allow normal operation of said hydraulic actuator output member from said first position to said second position after installation of said apparatus on said motor vehicle.

4,551,977

TURBOCHARGED INTERNAL COMBUSTION ENGINE

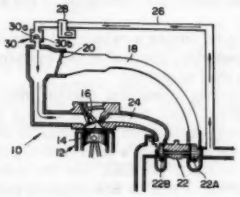
Motohiro Matsumura, Funabashi, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Oct. 24, 1983, Ser. No. 544,637

Claims priority, application Japan, Oct. 26, 1982, 57-187790

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—611 **5 Claims**



1. A turbocharged internal combustion engine comprising:

means defining an intake air passageway communicable with an engine combustion chamber;

a throttle valve pivotally disposed in said intake air passageway;

a turbocharger having a compressor wheel rotatably disposed in said intake air passageway upstream of said throttle valve;

means defining an intake air bypass passageway connecting a first portion of said intake air passageway upstream of said compressor wheel with a second portion of said intake air passageway downstream of said throttle valve bypassing said throttle valve and said compressor and communicable with the engine combustion chamber;

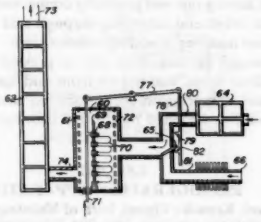
an air regulator disposed in said intake air bypass passageway and arranged to allow air to flow from said intake air passageway upstream of said compressor wheel into the engine combustion chamber through said intake air bypass passageway only when engine temperature is below a predetermined level; and

a check valve disposed in said intake air bypass passageway to prevent intake air from reverse flow in the direction from said second portion of said intake air passageway downstream of said throttle valve toward said air regulator.

4,551,978
BIMETALLIC SOLAR ENGINE

Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526

Filed Aug. 2, 1982, Ser. No. 404,449
Int. Cl.[4] F03G 7/02
U.S. Cl. 60—641.13 4 Claims



1. A solar heat engine comprising:

a source of heated air provided by a hot air solar collector,

a source of cool air provided by a finned air duct situated in a low temperature region,

a thermal energy converter comprising a plurality of thermally responsive curved bimetallic elements, each of said elements having both ends attached to moveable sliders which slide along at least one guide rod, said bimetallic elements being mounted on said at least one guide rod in a serial manner with one end of the first of said bimetallic elements being fixed such that heating and cooling the serially arranged bimetallic elements produces a compound reciprocable movement, and a drive rod attached to an end opposite said fixed end so that said reciprocable movement may be coupled to an external load,

means for supplying alternate drafts of air from said sources of heated and

cool air across said thermal energy converter comprising a solar heated thermal convection column connected in fluid flow communication with one end of said thermal energy converter and a switching valve in fluid flow communication with the opposite end of said thermal energy converter, said switching valve alternating the fluid flow communication between said sources of heated and cool air and said thermal convection column such that the draft created in said thermal convection column draws air alternately from said sources across said thermal energy converter producing a reciprocating movement in said drive rod.

4,551,979
METHOD AND APPARATUS FOR A THERMODYNAMIC CYCLE BY USE OF DISTILLATION

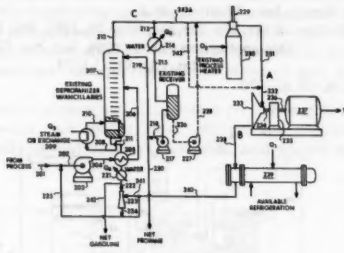
Joseph Wilensky, Denver, Colo., assignor to Soma Kurtis and Jack C. Sloan, both of Denver, Colo.

Division of Ser. No. 262,783, May 11, 1981, Pat. No. 4,442,675.
This application Jun. 20, 1983, Ser. No. 506,707
Int. Cl.[4] F01K 17/00, 25/06
U.S. Cl. 60—648 76 Claims

1. A process for approximating an isenthalpic compression of a working fluid from a state B (representing a pressure P_2 lower than a pressure P_1 of a state A and a temperature T_2 lower than a temperature T_1 of state A) to a state C (representing a pressure P_3 approximating P_1 and a temperature T_3 intermediate to temperatures T_1 and T_2 such that $T_2<T_3<T_1$) comprising:

pressure energizing the working fluid in state B by,

(a) communicating and mixing the working fluid with a large quantity of a motive liquid solvent selected to reduce the two fluids to a single liquid phase, and thereafter

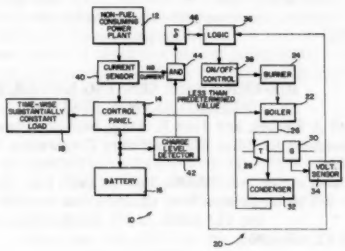


(b) pumping the combined liquid phase to pressure P_3 and temperature T_3 thus achieving state C for the working fluid.

4,551,980
HYBRID SYSTEM FOR GENERATING POWER

Lucien Y. Bronicki, Rehovot, Israel, assignor to Ormat Turbines, Ltd., Yavne, Israel

Filed Mar. 25, 1983, Ser. No. 479,012
Int. Cl.[4] F03G 7/02
U.S. Cl. 60—698 10 Claims



1. A power plant for supplying electricity to an electrical load comprising:

(a) an intermittently operable non-fuel-consuming power generator connected through a control circuit to a battery for charging the latter during operation of the power generator;

(b) an electrical power generator connected to a prime mover in the form of a closed Rankine cycle vapor turbine for charging the battery and supplying current to the electrical load when the prime mover is operated;

(c) a sensor circuit for sensing at least one electrical parameter of the power plant and thereby controlling the operation thereof;

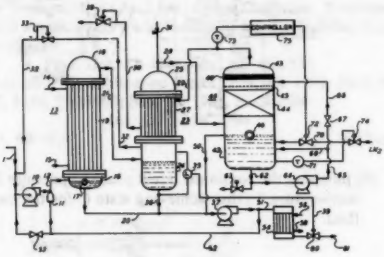
(d) control means responsive to the sensor circuit for operating the turbine, said control means being constructed and arranged to control the operation of the turbine by controlling the fuel supply for the turbine; and

(e) a delay circuit interposed between the sensor circuit and the control means for preventing the sensor circuit from exerting control over the operation of the turbine until the lapse of a predetermined time interval after said at least one electrical parameter is sensed.

4,551,981
HEAT EXCHANGE METHODS AND APPARATUS

Ratan Banerjee, New Brunswick, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Division of Ser. No. 265,264, May 20, 1981, Pat. No. 4,444,016.
This application Feb. 1, 1984, Ser. No. 576,076
Int. Cl.[4] F17C *1/18*
U.S. Cl. 62—70 11 Claims



1. A method of continuously condensing a vapor component of a gas mixture supplied to a reflux heat exchange device containing a body of the liquid phase of said vapor component comprising the steps of:

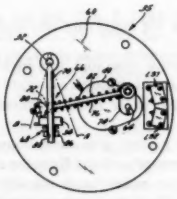
introducing a flow of a cryogenic liquid, having a boiling point below the boiling point of said vapor component, directly into said liquid phase body thereby chilling said liquid phase and stirring the same to substantially preclude freezing of said liquid phase; and

removing said chilled liquid phase from said device and returning said removed chilled liquid phase as reflux to said device and into contact with said gas mixture to thereby condense said vapor component.

4,551,982
ICE-THICKNESS SENSING DEVICE IN REFRIGERATION SYSTEM

Erich J. Kocher, and John K. Kopp, both of Milwaukee, Wis., assignors to Vilter Manufacturing Corporation, Milwaukee, Wis.

Division of Ser. No. 503,806, Jun. 13, 1983, Pat. No. 4,497,181.
This application Nov. 13, 1984, Ser. No. 670,014
Int. Cl.[4] G01K *13/00;* G01B *3/16*
U.S. Cl. 62—130 3 Claims



1. An ice thickness sensing device comprising:

a support;

a probe rotatably mounted on said support;

an electric motor mounted on said support and having a rotatable motor shaft;

a drive linkage connected between said motor shaft and said probe and operable in response to rotation of said motor shaft in one direction to rotate said probe from a starting position and an end position;

a potentiometer mounted on said support and having a rotatable potentiometer shaft;

and drive means connected between said drive linkage and said potentiometer shaft whereby rotation of said probe is accompanied by proportional rotation of said potentiometer shaft;

said drive linkage comprising:

a rigid drive member connected to and extending radially from said probe, said rigid drive member having an aperture therein;

a link connected to and rotatable by said motor shaft;

a drive rod having one end pivotally connected to said link and having its other end extending through said aperture in said rigid drive member in sliding relationship;

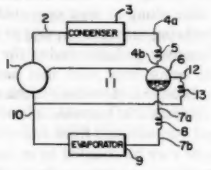
abutment means on said drive rod to prevent said other end thereof from being withdrawn from said aperture;

and a helical compression spring around said drive rod between said link and said rigid drive member.

4,551,983
REFRIGERATION APPARATUS

Akira Atsumi; Kensaku Oguni, both of Shimizu; Takao Senshu, Niihari; Hirokiyo Terada, Shizuoka, and Kazuo Yoshioka, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,374
Claims priority, application Japan, Jun. 17, 1983, 58-107655
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—174 14 Claims



1. A refrigeration apparatus having a refrigerant circuit constituted by a compressor,, a condenser, a first pressure reducer, a gas-liquid separator, a second pressure reducer and an evaporator connected to one another in series, and a gas injection line connected between a gaseous phase portion of said gas-liquid separator and a compression chamber of said compressor, characterized by comprising a liquid refrigerant extracting passage providing a communication between a portion of said gas-liquid separator at a predetermined level and a portion of the low-pressure side of the refrigerant circuit.

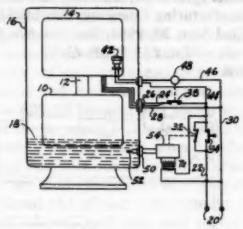
4,551,984
DEGRADATION SENSING AND SHUT-DOWN MEANS FOR REFRIGERATION MOTOR-COMPRESSOR UNITS

Richard E. Vogel, Cincinnati, and Benjamin Bowsky, Maineville, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 499,321, May 31, 1983, Pat. No. 4,490,988.
This application Sep. 21, 1984, Ser. No. 652,840
Int. Cl.[4] F25B *31/00*
U.S. Cl. 62—193 3 Claims

1. In an enclosed motor-compressor unit for air conditioning or heat pump service which includes a refrigerant-oil mixture in the enclosure, primary A.C. electrical power source, circuit connections including a normally open switch connecting the motor of said unit across said A.C. power source, a D.C. relay which when energized closes said normally open switch thereby to complete said motor energizing circuit, a contaminant sensor for sensing conductive particles in said mixture comprising a pair of spaced electrodes immersed in said mixture, a circuit for concurrently imposing an A.C. potential gradient across said electrodes and energizing said D.C. relay comprising circuit connections connecting said electrodes across a second A.C. power source and circuit connections including a voltage dropping resistor and rectifying means

connecting said D.C. relay in parallel with said electrodes, and a fuse connected in series with both said electrodes and said relay and responsive to a predetermined sum of current flow



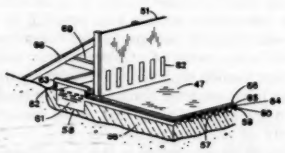
across said electrodes and said relay to open and break said circuit connecting said electrodes and said relay across said second A.C. power source thereby to thereby to continuously shut-down said unit.

4,551,985

RINK COVERING STRUCTURE

Bruce F. Kovach, 5918 Radnor, Detroit, Mich. 48224

Division of Ser. No. 407,031, Aug. 11, 1982, Pat. No. 4,467,619.
This application May 3, 1984, Ser. No. 590,835
Int. Cl.[4] A63C *19/10*
U.S. Cl. 62—235 **4 Claims**



1. A structure for selectively providing shade for an outdoor ice rink comprising: a waterproof cover having a downward facing surface of aluminum, support posts for supporting said waterproof cover, positioned at selected distances around the periphery of the ice rink, said waterproof cable providing total shade to the ice rink when in a first position, cable means secured to said waterproof cover at one end thereof and to reversible winch means at the other end thereof for moving the waterproof covering to a second position wherein the cover allows sunlight to strike the ice rink, a drain hole in the waterproof cover and means for conveying water away therefrom.

4,551,986

TRANSPORT REFRIGERATION UNIT

Lowell M. Anderson, Bloomington, and Rodney H. Volk, Eden Prairie, both of Minn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

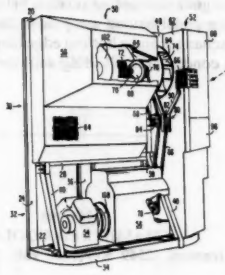
Filed Oct. 17, 1984, Ser. No. 661,556
Int. Cl.[4] B60H *3/04*
U.S. Cl. 62—239 **11 Claims**

1. In a transport refrigeration unit adapted to be mounted on the front face of a transport trailer or the like and having a power pack including at least an internal combustion engine for driving a refrigerant compressor, and including a plate fin refrigerant condenser and a refrigerant evaporator, a construction and structural arrangement of elements for the unit comprising:

a rectangular planar main frame including top, bottom, and opposite side members and having a horizontal cross member at a level dividing the main frame into an upper major portion area and a lower minor portion area;

forwardly projecting frame means at the base of said main frame for supporting said engine and compressor forwardly of said lower minor portion area, said engine and compressor being disposed with their crankshafts generally horizontal and parallel to the plane of said main frame;

an evaporator plenum and a condenser plenum in generally side-by-side, but spaced apart, relation and projecting forwardly in said upper portion area, said spaced apart



relation defining a forwardly-open channel between the plenums;

a condenser blower and an evaporator blower on a common shaft extending horizontally and in a plane substantially parallel with the plane of said main frame;

a bearing and support housing for said shaft inside said evaporator plenum and supported by the plenum wall defining one side of said channel;

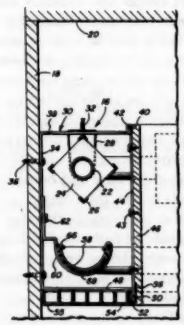
said evaporator blower being located in said evaporator plenum, and said condenser blower being located in said channel and having an inlet in communication with said condenser plenum.

4,551,987

SOLAR ASSISTED HEAT PUMP HEATING AND COOLING SYSTEM

Larry D. Cutlip, Parkersburg, W. Va., assignor to Sol-Chem, Inc., Parkersburg, W. Va.

Filed Dec. 28, 1983, Ser. No. 566,409
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—324.5 **15 Claims**



1. A heating and cooling system comprising a heat pump refrigeration system including an exteriorly mounted heat exchanger, an interiorly mounted heat exchanger, a compres-

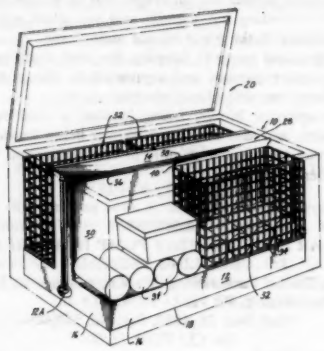
sor assembly, an expansion device associate with each heat exchanger and a reversing valve to control refrigerant flow whereby said heat exchangers may be selectively operated as a condenser and evaporator, said interior heat exchanger being horizontally elongated and extending along at least a portion of the wall of an enclosed space to be conditioned and mounted in spaced but adjacent relation to the wall and in spaced but adjacent relation to a ceiling, a generally rigid valance panel mounted in concealing relation to the interior heat exchanger and in spaced relation to the wall and ceiling to provide convective flow of ambient air over the interior heat exchanger, and condensate collecting and drain means below the interior heat exchanger in concealed relation behind the valance panel, said valance panel having a top edge oriented slightly above the heat exchanger and a bottom edge disposed a short distance below the condensate collecting and drain means.

4,551,988

CHAMBERED COOLER

Joseph Petrantoni, 2549 Keystone Rd., Tarpon Springs, Fla. 33589

Filed Jun. 19, 1984, Ser. No. 622,209
Int. Cl.[4] F25D *3/08*
U.S. Cl. 62—457 **9 Claims**



1. A chambered cooler for insertion within a chest or to be integrally therewith, the chest including a chest base having upstanding side walls and a bottom wall forming an open ended chest enclosure, including a chest lid for positioning about the opened end of the chest enclosure, and being dimensioned to receive articles to be cooled or heated when placed therein, the chambered cooler comprising in combination: a watertight primary chamber, said primary chamber including a configuration approximating the interior configuration of the bottom wall of the chest base and being horizontally disposed on the bottom wall within the chest;

a watertight first secondary chamber having a top end opened along substantially the full length thereof, said first secondary chamber being vertically disposed in the chest and being connected in fluid communication with said primary chamber; and

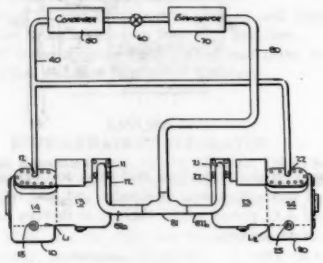
a first cooler lid fitted about said top end of said first secondary chamber for permitting filling of both said first secondary chamber and said primary chamber with the refrigerant whereby, upon placement of the articles within the chest and upon filling said chambers.

4,551,989

OIL EQUALIZATION SYSTEM FOR REFRIGERATION COMPRESSORS

Herbert S. Lindahl, Danville, Ill.; Paul V. Barsteika, Covington, Ind., and Daniel P. Werner, Danville, Ill., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Nov. 30, 1984, Ser. No. 676,919
Int. Cl.[4] F25B *43/02*
U.S. Cl. 62—468 **9 Claims**



1. In a refrigeration system having a plurality of parallel compressors drawing refrigerant vapor from an evaporator and not having a lubricant separator upstream of said evaporator, an improved lubricant return system for distributing the proper amount of lubricant to each compressor to maintain the proper crankcase level of lubricant for operation comprising:

a compressor suction inlet on each compressor located at an elevation above the maximum crankcase lubricant level,

a common suction header located at an elevation below that of the compressor suction inlet on each of the compressors, said common suction header being connected by a conduit to the outlet of said evaporator, and

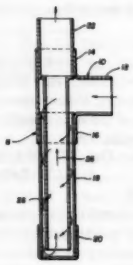
compressor suction branch lines connecting the compressor suction inlets with the common suction header, each said branch line being of a size that, at the minimum operating capacity of the compressor serviced thereby, the mass velocity of the suction gas to the compressor is sufficent to carry lubricant into the compressor as an entrained liquid.

4,551,990

OIL RETURN APPARATUS FOR A REFRIGERATION SYSTEM

John C. Honoshowsky, Rte. 2, Box 361A, Williamsport, Md. 21795

Filed Oct. 18, 1984, Ser. No. 661,993
Int. Cl.[4] F25B *43/02*
U.S. Cl. 62—468 **4 Claims**



1. An oil return apparatus for a refrigeration system comprising:

an outer tubular element closed on one end thereof and open on the other end;

an inlet along the length of said outer tubular element near said open end thereof that forms an open end portion extending from said inlet;

an inner tubular element;

said inner tubular element having a large diameter portion and a small diameter portion;

said large diameter portion of said inner tubular element having an outer diameter substantially the same as the inner diameter of said open end portion of said outer tubular element and secured within said open end portion of said outer tubular element and sealed to the inner surface thereof on the open end side of said inlet with said small diameter portion of said inner tubular element extending along said inlet coaxially within said outer tubular element toward said closed end with a lower end spaced from said closed end of said outer tubular member;

whereby fluid entering said inlet will travel between said outer tubular element and said small diameter portion through the spacing at the closed end and out through said small and larger diameter portions of said inner tubular element.

4,551,991

MULTI-EFFECT ABSORPTION REFRIGERATING MACHINE

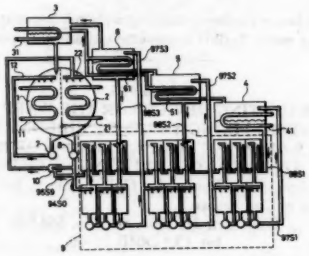
Nobutaka Miyoshi, Tokyo; Shigeo Sugimoto, and Michihiko Aizawa, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1985, Ser. No. 702,749

Claims priority, application Japan, Feb. 22, 1984, 59-30236

Int. Cl.⁴ F25B *15/00*

U.S. Cl. 62—476 **6 Claims**



1. In a multi-effect absorption refrigerating machine which is provided with an evaporator, a primary absorber, a condenser and at least two generators which are connected so that refrigerant vapor generated in one generator is used as a heat source for a subsequent generator, a refrigerant generated in each generator is cooled into a liquid by the condenser, the refrigerant liquid thus prepared is introduced into the evaporator and evaporated therein, the refrigerant vapor thus formed is introduced into the absorber and is absorbed therein by the solution returning from the generators, and the solution having absorbed the refrigerant vapor is supplied to the generators, a multi-effect absorption refrigerating machine which is characterized in that auxiliary evaporator-absorber stages composed of auxiliary evaporator stages making the refrigerant vapor vaporize from the solution and auxiliary absorber stages connected with said evaporator stages through vapor passages and absorbing the refrigerant vapor are provided in a plural set; solution passages, each connecting one evaporator stage with the adjacent one are provided between the adjacent ones of the evaporator stages so that the solution may flow serially; solution passages, each connecting one absorber stage with the adjacent one are provided between the adjacent ones of the absorber stages so that the solution may flow serially, the absorber stages of the evaporator-absorber stages are disposed in a solution supply channel from the primary absorber to the generators, the evaporator stages of the evaporator-absorber stages are disposed in a solution return channel from the generators to the primary absorber, and part of the solution taken out of the final absorber stage of each evaporator-absorber stage is supplied to each generator separately.

4,551,992

APPARATUS FOR COOLING A BIOLOGICAL OR MEDICAL SPECIMEN

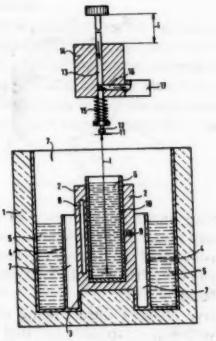
Hellmuth Sitte, Siefeld, and Heinrich Kleber, Vienna, both of Austria, assignors to C. Reichert Optische Werke, AG., Vienna, Austria

Filed Sep. 17, 1984, Ser. No. 651,400

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332586

Int. Cl.⁴ F25B *19/00*

U.S. Cl. 62—514 R **10 Claims**



1. An apparatus for cooling a biological specimen comprising:

(1) an insulated containment vessel for containing a cryogenic fluid;

(2) a bath for containing a cooling liquid positioned within said vessel, said bath having an open top;

(3) means for cooling the cooling liquid utilizing the cryogenic fluid;

(4) an injection rod positioned above said bath, said injection rod having a specimen carrier rigidly mounted thereon;

(5) means for injecting said injection rod axially into said bath from a first upper position above the bath to a second lower position within the liquid; and

(6) guard means to contain liquid splashed by the injection of the specimen carrier into the liquid whereby cooling liquid is substantially prevented from being thrown out of the cooling bath as a result of said splashing.

4,551,993

NECKLACE WITH SLIDABLY MOUNTED DECORATIVE ELEMENT

Morihiro Nagahori, Tokyo, Japan, assignor to Kabushiki Kaisha Nagahori, Tokyo, Japan

Filed Oct. 15, 1984, Ser. No. 661,298

Claims priority, application Japan, Nov. 2, 1983, 58-170598

Int. Cl.⁴ A44C *25/00*

U.S. Cl. 63—31 **5 Claims**

1. A necklace comprising:

an elongated necklace band which is constructed and arranged to be looped about a wearer's neck so as to at least generally encircle the wearer's neck and hang down in front over the wearer's chest;

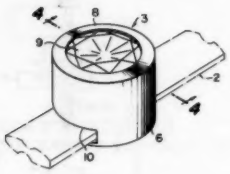
said elongated necklace band effectively having a non-circular transverse cross-sectional shape, at least throughout a portion of substantial longitudinal extent located where

the elongated necklace band will hang down in front over the wearer's chest; and

a slider-mounted decorative element means including a casing having a longitudinal axis and a forwardly-exposed ornament;

said casing having means securing said forwardly exposed ornament thereto at one axial end of said decorative element means, and means defining a slot laterally therethrough behind said forwardly-exposed ornament adjacent the other axial end of said decorative element means;

said slot means, at at least one site along the length thereof being transversely of generally similar non-circular cross-sectional shape to said portion of said elongated necklace band, while being sufficiently larger in transverse cross-section as to permit the slider-mounted decorative element means to slide freely longitudinally along said portion of said elongated necklace band so as to be automatically



self-centering under the influence of gravity, but being insufficiently larger in transverse cross-section to permit said slider-mounted decorative element to rotate significantly angularly of the longitudinal axis of said elongated necklace band;

said decorative element means being so constructed and arranged with respect to said band that when the necklace is worn with one surface of said band portion facing the wearer's chest and with said band portion lying generally in a plane, said decorative element means projects outwardly from the opposite surface of said band portion with said longitudinal axis generally perpendicular to said plane;

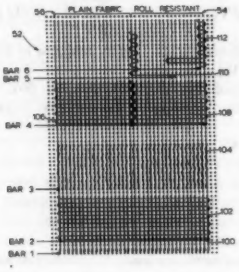
said ornament being thereby superimposed upon said elongated necklace band so as to falsely appear to be mounted to said elongated necklace band by interposition of said casing in said elongated necklace band.

4,551,994

WAISTBAND FABRIC

Tony Vailati, Graham, and Joseph A. Murray, Burlington, both of N.C., assignors to Olympic Narrow Fabrics Company, Inc., Graham, N.C.

Filed Apr. 23, 1984, Ser. No. 602,924
Int. Cl.⁴ D04B *23/08*
U.S. Cl. 66—193 **3 Claims**



1. An elastic waistband comprising an integrally warp knit fabric strip having upper and lower lengthwise extending portions characterised by:

(a) both of said portions being of substantially the same width;

(b) both of said portions incorporating elastic filling threads for the full width thereof and running substantially lengthwise thereof and comprising bare elastic threads prior to the knitting thereof;

(c) both of said portions incorporating at least one multifilament filling thread knitted back and forth across the full width of said strip;

(d) both of said portions providing substantial lengthwise extending elasticity and substantially no widthwise elasticity;

(e) the upper of said portions having at least one additional multifilament filling thread extending across the width thereof and the lower of said portions having at least one additional monofilament filling thread extending across the width thereof;

(f) both of said portions incorporating at least one additional multifilament filling thread which in the knitting thereof follows the sequence of passing back and forth over a major portion of the width of said upper portion followed by passing back and forth over a minor portion of both positions adjacent the join line thereof and connecting said portions together;

(g) said upper portion incorporating a further multifilament filling thread which in the knitting thereof follows the sequence of passing back and forth over a major portion of the width of said upper portion followed by passing back and forth on the selvedge of said upper portion;

(h) said upper portion exhibiting an anti-roll knit construction characteristic in the transverse direction of said strip; and

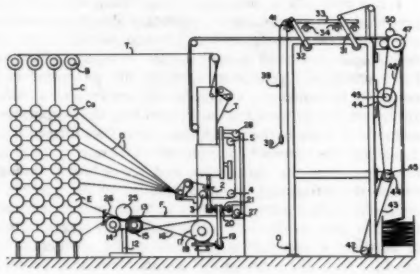
(i) said lower portion exhibiting a plain knit construction and being more flexible transversely than said upper portion.

4,551,995

REGULATING DEVICE FOR THE WARP AND THERMO-FIXING YARNS OF RIBBONS WITH SELF-GRIPPING LOOPS, CAPABLE OF BEING ADAPTED TO A KNITTING MACHINE

Guy Louison, Saint Bonnet les Oules, France, assignor to V. Louison et Cie, France

Filed Oct. 21, 1983, Ser. No. 544,084
Int. Cl.⁴ D04B *23/00*
U.S. Cl. 66—203 **9 Claims**



1. Regulating devices for the warp and thermo-fixing yarns of ribbons with self-gripping or self-adhesive loops, capable of being adapted to a knitting machine, characterized in that they include: a creel (C) with anti-twist means for the yarns (F) which are to form the self-gripping female loops of the ribbon; a reacher device for said yarns (F) with distributing rollers (13–14) driven with adjustable speed through the intermediary of a speed reduction gear (18) receiving its motion from the

motor shaft (21) of the knitting machine; a thermo-fixing unit for the knitted ribbons at the exit thereof from the knitting machine, with a vertically movable horizontal frame (33) provided with the thermo-fixing elements and maintained in the lower working position by an electromagnet system (41) which is acting when the knitting machine is in operation only; a roller (48) with driving means for the ribbons after the stabilization treatment thereof, and driven at a controlled speed when the knitting machine is in operation.

4,551,996

WASHING MACHINE WITH DRIER

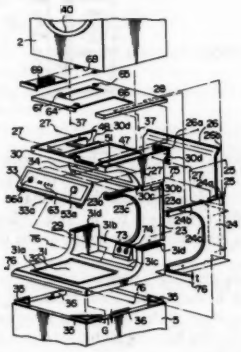
Etsuro Hirose; Kimio Takahashi, both of Hitachi; Toshiro Mori, Katsuta, and Haruyuki Kaito, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 317,844, Nov. 3, 1981, Pat. No. 4,507,942. This application Oct. 15, 1984, Ser. No. 660,874

Claims priority, application Japan, Nov. 5, 1980, 55-154678

Int. Cl.[4] D06F *29/02*

U.S. Cl. 68—20 **11 Claims**



1. A washing machine with a drier comprising: a washing machine body; a drier carrier mounted on said washing machine body; and a drier body carried by said drier carrier; wherein said drier carrier is composed of a left and right side panels made of steel sheets, a rear panel secured to the rear ends of said side panels, a top panel secured to the upper ends of said side panels and a cover covering said side panels, said side panels having an identical form which is symmetrical so that said side panels are replaceable with each other when the other panels are inversed.

4,551,997

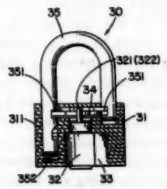
LAMINATED PADLOCK

Chung-I Huang, No. 16, Hsing-I Rd., Tainan City, Taiwan

Filed Jan. 17, 1984, Ser. No. 571,593

Int. Cl.[4] E05B *67/22*

U.S. Cl. 70—38 A **3 Claims**



1. An improved laminated padlock of the type having a lock body made of a plurality of metal plates with a central chamber and a plurality of openings formed therein, a cylindrical lock barrel and a tumbler portion situated in the central chamber, and a U-shaped shackle with a plurality of inwardly facing notches slidingly provided in the openings of the lock body, wherein the improvement comprises:

housing means defined by no more than three adjacent metal plates and including a rectangular space located in the center above the central chamber, a pair of shackle openings in opposing sides of said rectangular space, and a pair of cavities beside said shackle openings;

a pair of lock members each identically formed as an I-shaped structure, each member having a narrow or transverse end and a wider check end in parallel spaced position, said lock members slidingly overlapped in said rectangular space of said housing means for movement in opposite directions therein, each of said I-shaped lock members having a thickness approximately equal to that of said metal plates;

another lower metal plate having an opening in the center aligned with said central chamber and said another plate also defining a pair of openings corresponding to the shackle openings of said housing structure, said another plate defining the bottom side of the said housing structure rectangular space with respect to the front end of the lock barrel.

4,551,998

BAGGAGE CLOSURE

Jacques Ricouard, and Claude Chappoux, both of Sancoins, France, assignors to L.A. Ricouard S.A., Courbevoie and Ronis S.A., Cedex, both of, France

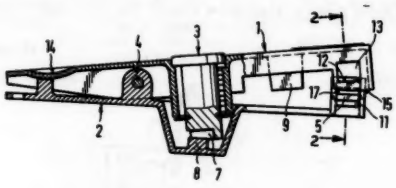
PCT No. PCT/EP83/00003, § 371 Date Aug. 23, 1983, § 102(e) Date Aug. 23, 1983, PCT Pub. No. WO83/02478, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 7, 1983, Ser. No. 530,594

Claims priority, application France, Jan. 12, 1982, 82 00341

Int. Cl.[4] E05B *65/52*

U.S. Cl. 70—69 **1 Claim**



1. A baggage closure comprising:

a mounting formed with a sliding piece pressed outwardly by a spring and provided at a location spaced from said sliding piece with a lug;

a closing lever pivotally mounted on said mounting and provided with a cutout which, in a closing position of said lever is aligned with an end of said sliding piece located opposite said spring and engaged by said sliding piece; and

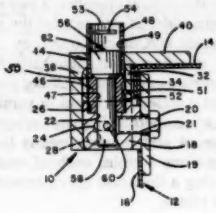
a lock cylinder rotatable on said lever upon insertion of a key in said cylinder for locking said lever in a closing position, said lock cylinder being axially aligned with said lug and being formed with an eccentric part rotatable about said lug upon insertion of said key into said lock cylinder from a position in which said eccentric part engages said lug to prevent pivotal movement of said lever on said mounting into a position in which said eccentric part clears said lug to permit pivotal movement of said lever on said mounting into an opening position of said closure.

4,551,999

LOCK ASSEMBLY FOR ENCLOSURE COVER

Richard S. Guiler, Newton, N.J., assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Feb. 1, 1983, Ser. No. 462,979
Int. Cl.[4] B65D *55/14*
U.S. Cl. 70—159 **7 Claims**



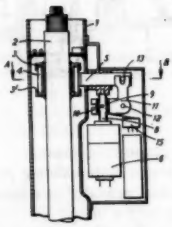
1. A lock housing assembly for attachment to a container having a cover to enable said assembly to retain the cover in the closed condition, said assembly comprising a support for attachment to a side wall of the housing, a cover retainer hinged to the support and being movable between an open and a closed position, said support and said cover retainer having apertures which are aligned when the cover retainer is in the closed position, a shear force resisting member retained in said cover retainer and movable in said retainer when said apertures are aligned, between a locking position in which said member extends into both apertures, and an unlocking position in which it does not extend between both apertures to allow said cover retainer to be moved to the open position to allow the cover to be opened, and removable means for locking the shear force resisting member in the locking position.

4,552,000

STEERING SHAFT ANTI-THEFT DEVICE FOR MOTOR VEHICLE

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Mar. 13, 1984, Ser. No. 588,927
Claims priority, application France, Mar. 25, 1983, 83 04897
Int. Cl.[4] B60R *25/02*
U.S. Cl. 70—185 **15 Claims**



1. A steering shaft anti-theft lock for a motor vehicle comprising:

(a) a hollow annular sleeve for attachment to a steering shaft, said sleeve having an aperture extending around the entire periphery of the sleeve,

(b) a plurality of freely rotatable elements disposed within said sleeves,

(c) a stop member within the sleeve, said rotatable elements not occupying the entire circumferential space within said sleeve, and

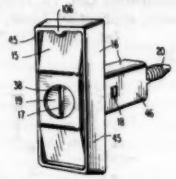
(d) a lock bolt movable between first position where the bolt is free of the rotatable elements and a second position where the bolt penetrates the aperture and locates between, said rotatable elements being displaceable by said bolt along the circumferential space within said housing.

4,552,001

HIGH SECURITY T-HANDLE ASSEMBLY

Stevie C. Roop, Dugspur, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Filed Dec. 6, 1983, Ser. No. 558,473
Int. Cl.[4] E05B *63/00*
U.S. Cl. 70—208 **9 Claims**



1. A high security pop-out T-handle assembly of the type containing a lock cylinder, the assembly comprising:

(a) a cylinder front handle containing a passage therethrough for key access to the lock cylinder, the handle having an inwardly facing flange at the outer face of the passage,

(b) a separate cylinder/extension housing of elongated hollow shape having connection means on one end of the housing to mate with connection means on the cylinder front handle, the housing including a passageway through its wall for passage of a lock cylinder bolt from the lock cylinder accommodated in the housing,

(c) removable mechanical connection means for securely and rigidly connecting the cylinder front handle and cylinder/extension housing in their assembled position, and to allow disassembly thereof, the assembled position of the cylinder front handle and cylinder/extension housing leaving an annular interstice behind the flange of the cylinder front handle,

(d) a cylinder protector plate positioned and freely rotatably in the interstice to resist drilling and pulling of the lock cylinder,

(e) an extension rod having a head within and a body extending linearly outwardly of an end of the cylinder/extension housing which is opposite the cylinder front handle,

(f) mechanical positively-engaging clutch means connecting the housing and the extension rod to allow the extension rod to be rotated when the lock cylinder is unlocked and the cylinder front handle pops out,

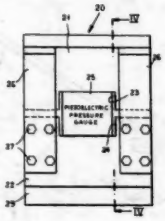
(g) a T-handle housing having a generally cup-shaped head configured to closely accommodate the cylinder front handle, and to cover the mechanical connection means when the cylinder front handle is positioned therein, the T-handle housing further having a hollow shank to accommodate the cylinder/extension housing, the shank having a wall configuration to receive a lock cylinder bolt extendable from a lock cylinder to lock the T-handle assembly, and

(h) a compression spring positioned between the end of the shank of the T-handle housing and the end of the cylinder-/extension housing, the spring being normally compressed to force the cylinder front handle outwardly when the lock cylinder is unlocked.

4,552,002
PLATE BENDING APPARATUS

Eduard Haeni, and Theo Frei, both of Zofingen, Switzerland, assignors to Hammerle, AG, Zofingen, Switzerland

Continuation of Ser. No. 498,517, May 26, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,649
Claims priority, application Austria, Jun. 7, 1982, 2207/82
Int. Cl.[4] B21B *37/08*
U.S. Cl. 72—19 **3 Claims**



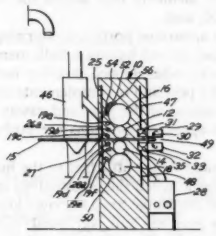
1. An apparatus for bending a plate, comprising:
a bending press having
a die forming a part of bearing points for supporting a plate to be bent,
a movable bottom of said die disposed below said bearing points and movable relative thereto to limit the penetration of a bent edge of said plate to establish a predetermined depth of bending and thereby determining a bending angle for said edge of said plate, and
a bending punch disposed above said die and including:
an upper section displaceable by a hydraulic press,
a lower section directly below said upper section having a bending edge bearing upon said plate between said points,
an electrical pressure gauge having a piezoelectric quartz crystal interposed between said sections, and
guide means between said sections for laterally supporting and guiding said upper section on said lower section whereby a plate-bending force applied to said plate by said punch is registered by said electrical pressure gauge;
a computer connected to said electrical pressure gauge for comparing bending forces registered by said gauge with predetermined forces required for a specific plate material to attain a predetermined bending angle as said punch penetrates into said die; and
a control unit connected to said computer and to said movable bottom for displacing said movable bottom to limit the depth of which said plate is bent by said punch to a value determined by said computer to obtain said predetermined bending angle for said plate and said material.

4,552,003
LUBRICANT REMOVAL SYSTEM FOR A COLD ROLLING MILL

Ronald E. Kolecki, Terre Haute, Ind., assignor to Atlantic Richfield Company, Denver, Colo.

Continuation of Ser. No. 521,050, Aug. 8, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 720,456
Int. Cl.[4] B21B *9/00, 27/10, 45/02*
U.S. Cl. 72—38 **2 Claims**

1. A method for removing coolant liquid from a mill for cold rolling a nonferrous metal after the metal is formed, said mill of the type including a roll stand having a pair of opposed work rolls and an upper and lower backup roll in the stand for rolling metal as the metal passes between the work rolls, and liquid application means in the mill for applying liquid to the metal and rolls during rolling, said liquid application means being positioned upstream from the rolls, said method comprising the steps of:
applying liquid to the rolls and roll form with said liquid application means upstream of the rolls;
removing liquid from the rolls by impinging gas on at least one of said backup rolls on an entrance side of the mill;
removing liquid from the roll form by impinging gas on the roll form passing from the rolls at an exit side of the mill;
withdrawing a gas and liquid mixture from opposite sides of the metal roll form at an exit side of the mill and from the rolls subsequent to the gas impinging steps;

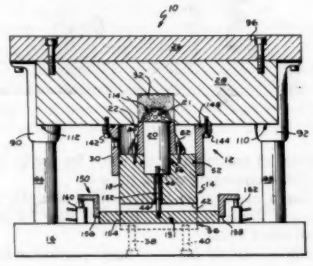


simultaneously at least partially enclosing the roll stand in a hood collection assembly comprising a plurality of shrouds for containing the gas and liquid mixture, said shrouds being positioned on the downstream side of the rolls on both sides of the roll form to define an exit slit for the roll form to pass therethrough during the gas impinging and withdrawal steps at the exit side of the mill;
transporting the withdrawn gas and liquid mixture to means for removing the liquid from the gas and liquid mixture;
removing the liquid from the mixture;
discharging the gas to the atmosphere; and,
recycling the liquid into a sump for the roll stand for reuse as coolant liquid in the mill.

4,552,004
APPARATUS FOR FORMING GOLF BALL MOLDS

Gilbert Barfield, 745 Carroll Street, Perry, Ga. 31069, and Gary J. Hagopian, 32 Brookmont Drive, Wilbraham, Mass. 01095

Filed Dec. 1, 1983, Ser. No. 557,113
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—60 **16 Claims**



1. An apparatus for making dimpled shells for golf ball molds, wherein the apparatus comprises:
(a) top and bottom portions that are adapted to be respectively attached to the upper and lower halves of a hydraulic press for movement toward or away from one another;
(b) said bottom apparatus portion comprising:
(i) a lower die set base to which an upstanding pedestal is fixedly attached;
(ii) a bullet-shaped mounting post fixedly supported by the

pedestal so that it extends from the top of the pedestal in an upright position, wherein the upper end of the post comprises a hemispherical, dimpled master mold for cold working a dimpled mold shell from a smooth hemispherical metal cup placed on top of the master;

(iii) means for removing a finished mold shell from atop the master, said means comprising a spring-biased stripper ring that is attached to the top of the pedestal and which surrounds at least a midsection of the post, wherein said ring is biased away from the top of the pedestal by springs located between it and the pedestal, and its upward travel away from the pedestal is limited by stop members that attach the stripper ring to the pedestal; and,

(c) said top apparatus portion comprising:

(i) an upper die set having a hulk member attached to its underside, wherein said member includes a cavity that faces the post and is complementarily shaped to it for a close mating of the post and cavity when the top and bottom apparatus portions are pushed toward one another;

(ii) a vacuum flange attached to the hulk for mating with the pedestal when the press halves are moved together, wherein the flange has a hollow cylindrical portion that extends from the hulk, surrounds the hulk's cavity, and has an inner surface that is complementarily shaped and sized with the periphery of the top of the pedestal; and,

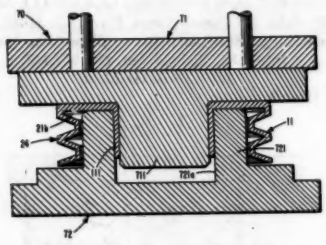
(iii) an insert housed within the hulk's cavity and within the boundary of the flange, wherein the insert has a hemispherical recess for surrounding the master mold and the hemispherical cup placed on top of the master.

4,552,005

METHOD OF MAKING A CLUTCH ROTOR FOR AN ELECTROMAGNETIC CLUTCH

Takashi Matsushita, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Jul. 27, 1983, Ser. No. 517,704
Claims priority, application Japan, Aug. 6, 1982, 57-137690
Int. Cl.⁴ B21D *35/00*
U.S. Cl. 72—68 **9 Claims**



1. A method of making a clutch rotor for use in an electromagnetic clutch consisting of the steps of:

(a) forming a cup-shaped blank with a straight, generally cylindrical flange wall and bottom plate by pressing a piece of sheet metal;

(b) forming an annular outward bulge portion in said flange wall by a pressing operation;

(c) pressing said bulge portion into at least one approximately V-shaped inwardly projecting groove wherein the walls of said V-shaped groove each comprise a single layer of sheet metal;

(d) forming a final V-shaped groove by applying a roller working operation to said approximately V-shaped groove; and

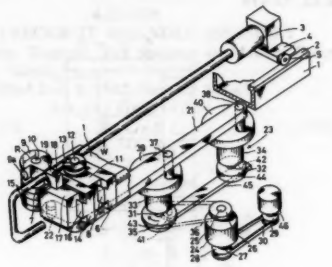
(e) pressing said bottom end plate of said cup-shaped blank to form a radially inwardly projecting inner cylindrical member.

4,552,006

BENDING APPARATUS

Teruaki Yogo, 4423 aza-Johnoh, Ohaza-Ohmori, Moriyama-ku, Nagoya-shi, Japan

Filed Jun. 29, 1983, Ser. No. 509,087
Claims priority, application Japan, Feb. 25, 1983, 58-31135
Int. Cl.⁴ B21D *7/04*
U.S. Cl. 72—149 **4 Claims**



1. In bending apparatus comprising:

(a) a support shaft connected to a frame and extending from said frame in the same direction as an article to be bent is fed;

(b) a substantially circular bending die removable coupled to said support shaft and freely rotatable about the axis of said shaft relative to said frame;

(c) a driven bender arm connected to one end of said support shaft and movable about the axis of said shaft relative to said frame and having a drive pin positioned at a distance from one end thereof, said pin being linked to a drive mechanism for receiving a bending force; the improvement in which:

(I) said drive mechanism includes a pair of rotated shafts spaced apart from each other and rotated by drive means;

(II) a pair of first crankpins respectively connected to said shafts, said crankpins being spaced not only the same distance from each rotated shaft as said drive pin is spaced from said support shaft, but also always oriented at the same angle relative to its shaft as that in which said drive pin is angularly oriented relative to said support shaft;

(III) a drive link is connected to said driven point at one end, to one of said crankpins at its other end and to the other crankpin between its ends, said link being mounted for circular movement; and

(IV) said drive shafts are interconnected to rotate synchronously.

4,552,007

DEVICE FOR REPLACING THE ROLLS OF ROLLING STANDS

Gianfranco Mantovan, Busto Arsizio, Italy, assignor to Pomini Farrel S.p.A., Castellanza, Italy

Filed May 31, 1984, Ser. No. 615,838
Claims priority, application Italy, Jun. 9, 1983, 22073/83[U]
Int. Cl.⁴ B21B *31/10*
U.S. Cl. 72—239 **3 Claims**

1. A device for replacing the rolls of rolling stands comprising:

a base;

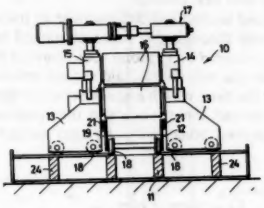
a first carriage, which is mounted for movement along said base in a first path, having at least first and second seats for receiving first and second pairs of rolls whose axes are perpendicular to the first path, and having means for supporting said pairs of rolls;

a second carriage supporting one end of a roll stand housing, which is mounted for movement along said base in a second path perpendicular to the path of said first carriage, for receiving one end of said pairs of rolls; and

a third carriage supporting the other end of said roll stand housing, which is mounted for movement along said base

in a third path perpendicular to the path of said first carriage and aligned with the second path, for receiving the other end of said pairs of rolls;

whereby said second and third carriages with their respective roll stand housings ends are detached from the first



pair of rolls and moved along the second and third paths away from said first carriage, said first carriage is moved along the first path to align said second pair of rolls with said second and third carriages, and said second and third carriages are moved back along the second and third paths to receive said second pair of rolls.

4,552,008

ROLLING MILL FOR SHEET MATERIAL

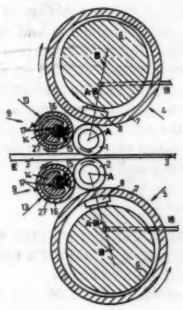
Beat Schlatter, Mutschellen, and Eugen Schnyder, Ottenbach, both of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zurich, Switzerland

Filed Aug. 18, 1983, Ser. No. 524,331

Claims priority, application Switzerland, Aug. 31, 1982, 5297/82

Int. Cl.⁴ B21B *31/16*

U.S. Cl. 72—243 **9 Claims**



1. A rolling mill comprising a roll stand having two work rolls defining a nip for passage of sheet material to be rolled, and a back up roll associated with each work roll; all of the rolls being rotatable on parallel axes, with the axes of the work rolls lying in a plane offset from the plane containing the axes of the back up rolls; a support device associated with each work roll and including hydrostatic elements which are arranged parallel with the work roll axis and urge the work roll against the associated back up roll to apply pressure on sheet material in the nip; the work rolls and the supporting devices being displaceable in the stand relatively to the back up rolls in a direction generally parallel with the path of sheet material through the nip; positioning means acting on both the work rolls and the support devices for adjusting the position of these parts in said displacement direction to thereby alter the spacing between the plane containing the axes of the work rolls and the plane containing the axes of the back up rolls and adapt the mill to the needs of a particular rolling process; and at least one of the back up rolls being a deflection compensation roll comprising a roll shell which rotates about a support member and is carried by hydraulically operated supporting elements arranged in the support member in a row parallel with the axis thereof, the support member being mounted in the stand for rotational adjustment about its axis so that the line of action of the supporting element can be kept in the plane containing the axes of the support member and the associated work roll regardless of alterations in the spacing between the planes containing the work roll axes and the back up roll axes effected by the positioning means.

4,552,009

UPSETTER

Fuminori Kaneko; Takashige Yamamura, both of Kobe, and Satosi Matsumoto, Toyonaka, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

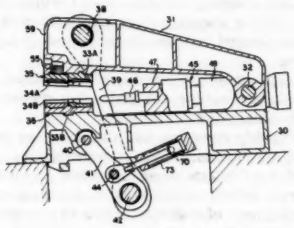
Filed Jan. 27, 1982, Ser. No. 343,219

Claims priority, application Japan, Jan. 29, 1981, 56-13494

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.⁴ B21D *7/06, 41/02*

U.S. Cl. 72—316 **11 Claims**



1. An upsetter comprising:

(a) a bed having a front end and a rear end;

(b) a grip tong having a rear end thereof pivotably connected to the rear end of said bed;

(c) a plurality of split dies provided at the front end of said bed and said grip tong, each of said plurality of split dies having an upset die section and a clamp die section;

(d) an upset mechanism mounted on said bed and including a plurality of punches each one of which is extractably protrudable into a corresponding one of said plurality of split dies;

(e) a pair of pull rods pivotably supported on said bed and on said grip tong rearwardly of said dies for imparting a required die closing force to said grip tong;

(f) first means for pivoting said pull rods back and forth between a first position in which said grip tong is pivoted to an open position and a second position in which said grip tong is pivoted to a closed position and said split dies are in their working positions;

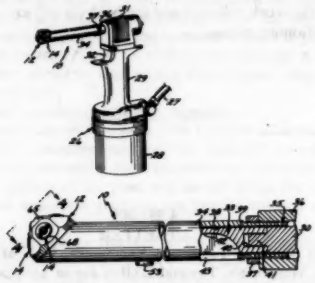
(g) second means independent of said first means for adjusting the tensile force exerted by said pull rods when in their second positions; and

(h) third means for applying a uniform clamping force to each of said clamp die sections during successive upsetting operations regardless of variations in the dimensions of the workpieces clamped therein during the successive upsetting operations.

4,552,010
PULLING HEAD FOR BLIND FASTENERS

James R. Hein, Lakewood, Calif., assignor to Olympic Fastening Systems, Downey, Calif.

Filed Jul. 9, 1984, Ser. No. 628,824
Int. Cl.[4] B21D 9/05
U.S. Cl. 72—391 32 Claims



1. A pulling head for pulling and setting blind fasteners of a plurality of different types, said pulling head comprising:

an elongated, generally hollow support housing having an opening at a front nose end thereof to permit individual insertion into said housing of the different types of blind fasteners;

a draw bolt assembly slidably carried within said housing and including means for grasping and pulling a blind fastener inserted into said housing through said nose end opening;

a turret cap including a plurality of head inserts shaped for receiving and setting the respective different types of blind fasteners; and

means rotatably mounting said turret cap on said support housing for movement of an interchangeably selected one of said head inserts to an operative position generally overlying and aligned with said nose end opening and the remaining ones of said head inserts to nonoperative positions spaced rearwardly from said selected one of said head inserts.

4,552,011
ESTABLISHING A DIFFERENTIAL PRESSURE ACROSS A CORE SAMPLE OR CALIBRATING A DIFFERENTIAL PRESSURE TRANSDUCER

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 427,258, Sep. 29, 1982, Pat. No. 4,487,056, which is a continuation-in-part of Ser. No. 282,307, Jul. 10, 1981, abandoned. This application Oct. 1, 1984, Ser. No. 655,828
Int. Cl.[4] G01L 27/00; G01N 15/08
U.S. Cl. 73—4 R 14 Claims

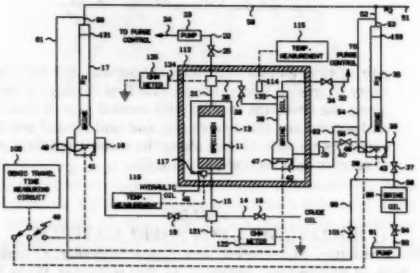
1. A method for establishing a desired differential pressure across a core sample, having first and second faces, wherein said first face of said core sample is in fluid communication with a first column containing a gas and water, wherein said second face of said core sample is in fluid communication with a second column containing a gas and water, wherein said water in said first column is supported by a first diaphragm to which a first sonic transducer is attached on the side of said first diaphragm opposite the water and wherein the water in said second column is supported by a second diaphragm to which a second sonic transducer is attached on the side of said second diaphragm opposite the water, said method comprising the steps of:

actuating said first sonic transducer to transmit a first sonic wave through the water contained in said first column, wherein said first sonic wave is reflected from the water-gas interface in said first column;

measuring the time which elapses between the transmission of said first sonic wave and the reception of the reflected first sonic wave by said first sonic transducer, wherein the elapsed time provides a measurement of the height of the water in said first column;

actuating said second sonic transducer to transmit a second sonic wave through the water contained in said second column, wherein said second sonic wave is reflected from the water-gas interface in said second column;

measuring the time which elapses between the transmission of said second sonic wave and the reception of the reflected second sonic wave by said second sonic transducer, wherein the elapsed time provides a measurement of the height of the water in said second column;



determining the pressure exerted by the water contained in said first column based on the density of the water and the height of the water in said first column;

determining the pressure exerted by the water contained in said second column based on the density of the water and the height of the water contained in said second column, wherein the differential pressure across said core sample is the difference in the pressure exerted by the water contained in said first column and the pressure exerted by the water contained in said second column; and

adjusting the level of the water contained in said first column and said second column until a desired differential pressure is obtained across said core sample.

4,552,012
RHEOMETER FOR ANALYZING THE ELASTIC AND/OR VISCOUS CHARACTERISTICS OF GELS AND LIQUID SYSTEMS

Leif R. Bohlin, Krankesjövägen 12, S-240 15 Södra Sandby, Sweden

PCT No. PCT/SE82/00246, § 371 Date Mar. 15, 1983, § 102(e) Date Mar. 15, 1983, PCT Pub. No. WO83/00387, PCT Pub. Date Feb. 3, 1983
PCT Filed Jul. 19, 1982, Ser. No. 478,558
Claims priority, application Sweden, Jul. 20, 1981, 8104453
Int. Cl.[4] G01N 11/16
U.S. Cl. 73—59 12 Claims

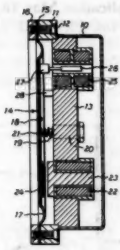
2. A rheometer for analyzing the elastic and viscous characteristics of a medium, comprising:

a casing supporting a movable member, a region of which is in contact with a surface of the medium, said movable member covers an opening of a cup-shaped casing in which there is provided a holder which carries a support in the form of at least one knife-edge member secured in said holder and having a knife edge directed towards an inner side of said member;

a tension spring affixed to an inner surface of said casing for maintaining said inner side of said movable member in rockable engagement with said knife edge;

means for limiting the inward movement of said movable member;

a device affixed to said casing for displacing said region of said movable member substantially perpendicular to said



surface non-destructively against the action of the medium; and

electrical means affixed to an interior surface of said casing for measuring the elastic and viscous characteristics by electrically measuring the resistance to such displacement.

4,552,013

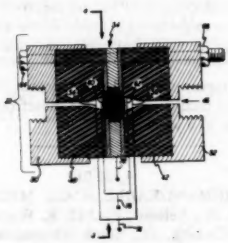
ELECTROCHEMICAL SYSTEM

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 465,786, Feb. 10, 1983, Pat. No. 4,497,199, which is a division of Ser. No. 241,945, Mar. 9, 1981, Pat. No. 4,413,505, and a continuation-in-part of Ser. No. 425,183, Sep. 28, 1982, , which is a division of Ser. No. 111,917, Jan. 14, 1980, Pat. No. 4,404,065. This application Mar. 5, 1984, Ser. No. 586,079

Int. Cl.[4] G01N *31/06*

U.S. Cl. 73—61.1 C **18 Claims**



1. An electrochemical flow cell for testing or treating a sample solution, said cell comprising:

a holder assembly defining a flow path and having an inlet for directing a stream of said solution into said cell, and an outlet for directing treated solution from said cell; and,

a plurality of electrode elements arranged in said holder, said electrode elements being operatively disposed, electrically insulated from one another, within said flow path, said plurality including at least one reference electrode, at least one counter electrode, and at least one working electrode, said at least one working electrode comprising a packed porous conductive matrix comprising a selected electrically-conductive material in finely divided or powdered form, confined within and restricting a segment of said flow path.

4,552,014

TOOTH FLANK PROFILE MEASURING APPARATUS CONTAINING A FEELER FOR DETERMINING THE SURFACE ROUGHNESS OF A TOOTH FLANK

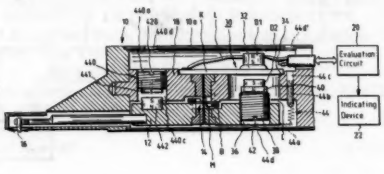
Nikolaus Berchtold, Zürich, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Dec. 17, 1984, Ser. No. 682,089

Claims priority, application Switzerland, Dec. 21, 1983, 6805/83

Int. Cl.[4] G01B *5/28, 5/20*

U.S. Cl. 73—105 **7 Claims**



1. A tooth flank profile measuring apparatus for determining the roughness of a tooth flank surface, comprising:

a housing;

a feeler rod pivotably mounted in said housing and said feeler rod defining an end;

a feeler tip for scanning the surface of said tooth flank and provided at said end of said feeler rod;

a measuring system operatively connected to said feeler rod and generating signals responsive to the deflection of said feeler tip while the same scans said surface of the tooth flank;

said measuring system comprising a Hall-effect sensor and means for generating a static magnetic field;

said Hall-effect sensor and said means for generating the static magnetic field being movable relative to each other;

one of said Hall-effect sensor and said means for generating a static magnetic field being mounted either at said housing or at said feeler rod and the other one of said Hall-effect sensor and said means for generating a static magnetic field being mounted either at said feeler rod or at said housing;

an evaluation circuit supplied with said signals generated by said measuring system in response to the deflection of said feeler tip while the same scans said surface of the tooth flank;

a bearing load adjustment device acting upon said feeler rod in order to adjust the bearing load of said feeler tip at said surface of the tooth flank while said feeler tip scans the surface of the tooth flank;

said pivotably mounted feeler rod defining a predetermined fulcrum; and

said bearing load adjustment device being arranged in spaced relationship with respect to said predetermined feeler rod fulcrum.

4,552,015

FUEL CONSUMPTION MEASURING SYSTEM

David P. Emmett, Haslett; Duane D. Muelling, Milford, and Ronald J. Willett, Pinckney, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1984, Ser. No. 578,538

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—113 **1 Claim**

1. A fuel consumption measuring system for use with an internal combustion engine comprising, in combination:

a main fuel reservoir;

an auxiliary fuel reservoir;

engine fuel delivery means;

means effective to supply fuel from the auxiliary fuel reservoir to the engine fuel delivery means and to return unused fuel to the auxiliary fuel reservoir;

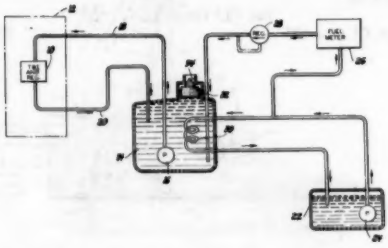
means effective to supply fuel from the main fuel reservoir to

the auxiliary fuel reservoir at a predetermined pressure so that the auxiliary fuel reservoir is maintained full and at the predetermined pressure;

means effective to vent vapors from the auxiliary fuel reservoir so that a constant volume of fuel is maintained in the auxiliary fuel reservoir;

a cooling coil in the auxiliary fuel reservoir;

means effective to circulate fuel from the main fuel reservoir



through the cooling coil so as to cool the fuel in the auxiliary fuel reservoir; and

measuring means effective to measure the fuel flow from the main fuel reservoir to the auxiliary fuel reservoir, the measured flow being equal to the fuel delivered to the engine by the engine fuel delivery means, whereby the pressurized fuel in the auxiliary fuel reservoir allows maximum engine acceleration rates with no delay in the make-up flow from the main fuel reservoir.

4,552,016

SENSOR FOR CURRENTMETER

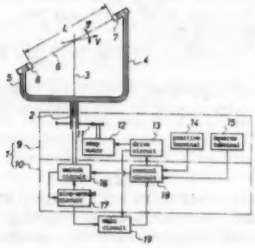
Satoshi Suyama, Hatano, Japan, assignor to The Tsurumi-Seiko Co., Ltd., Yokohama, Japan

Filed Aug. 9, 1983, Ser. No. 522,251

Claims priority, application Japan, Aug. 18, 1982, 57-142189

Int. Cl.[4] G01P *5/00*; G01F *1/66*

U.S. Cl. 73—170 A **7 Claims**



1. A sensor for a currentmeter comprising a pair of supersonic transmitter/receiver units which are arranged in fluid so as to face each other at a predetermined distance, a path therebetween forming a supersonic transmission path, wherein said pair of units are controlled by a sing-around control method and wherein a supporting member is provided to support said pair of transmitter/receiver units and to rotate said pair of units around an axis which intersects said supersonic transmission path, and wherein sing-around signals are output which correspond to an angular position of said supporting member.

4,552,017

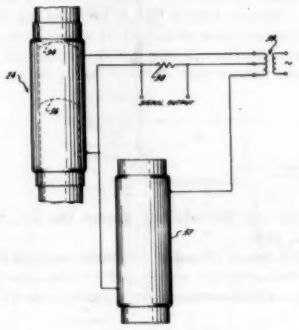
APPARATUS FOR MEASURING FLOW-RATE OF ELECTROMAGNETIC GRANULAR MEDIA

William C. Biehle, Cincinnati, Ohio, assignor to Metal Improvement Company, Inc., Teaneck, N.J.

Continuation-in-part of Ser. No. 439,917, Nov. 8, 1982, abandoned. This application May 16, 1984, Ser. No. 610,832

Int. Cl.[4] G01F *1/58*

U.S. Cl. 73—198 **15 Claims**



1. Gravity-fed and/or low velocity peening apparatus comprising in combination:

(a) reservoir means supplying ferromagnetic granular media disposed at a suitable elevation to provide head pressure for the media;

(b) filter means disposed below and downstream from the reservoir and communicating therewith to receive the media therefrom and having means stabilizing the flow-rate of the media to provide substantially constant head pressure below the filter means;

(c) metering means disposed below and downstream from the filter means and communicating therewith to receive the media from the filter, said metering means including means for providing a level of media indicative of flow rate therethrough, and having electrical inductive means responsive to the level of media in the metering means and producing an electrical signal responsive to such level; and

(d) nozzle means disposed downstream from the metering means and receiving the media therefrom and discharging the media to a workpiece.

4,552,018

INTERCHANGEABLE SCALE METER CASE

R. H. Legatti, Jr., Belleair, Fla.; H. R. Woolner, Manchester, and R. J. Cushing, Jr., South Alexandria, both of N.H., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 234,212, Feb. 13, 1981, abandoned. This application Feb. 1, 1983, Ser. No. 465,847

Int. Cl.[4] G01P *1/08*; G01R *1/08*

U.S. Cl. 73—431 **1 Claim**

1. A case for encasing a meter movement and its associated pointer, said case comprising:

a. an assembly further comprising:

(1) a faceplate, at least a portion of which is transparent; and

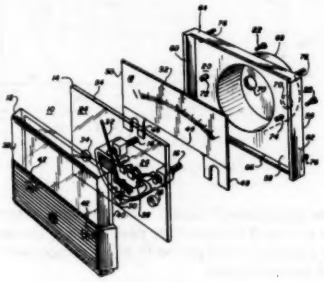
(2) a body, at least a portion formed as a plate, a portion of said plate being transparent, said body carrying said meter movement on protrusion means and said pointer fixedly therein and fixedly engaging said faceplate to form said assembly whereby said assembly completely encases said meter movement and said pointer;

b. connecting means for providing input signals to said meter

movement, said connecting means being connected to said meter movement and penetrating said assembly;

c. a rear cover having at least one opening for receiving said connecting means and proportioned to abut the rear of said assembly and securely attached thereto with said connecting means disposed within at least one of said openings;

d. scale means having at least one depending tab means and being of generally flat dimensions for displaying a parameter to be measured by said meter movement and indicated by said pointer, said scale means arranged to be held



fixedly between said rear cover and said assembly in a position seated on said protrusion means for allowing a sweeping of said pointer across the face of said scale means to indicate a level measurement of said parameter sensed by said meter movement, said arrangement thereby allowing an exchange of said scale means for some second scale means without any possibility of physically engaging said pointer or said meter movement and causing damage thereto; and

e. securing means for fixedly securing said face plate, said body plate portion, said rear cover and said scale means in proper position with respect to each other.

4,552,019

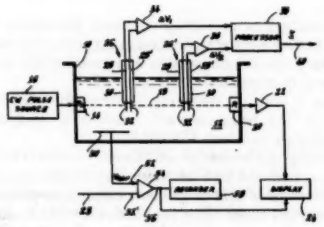
METHOD AND APPARATUS FOR MEASURING A COLLOIDAL POTENTIAL

Mark P. Freeman, deceased, late of Darien, Conn. (by Helen M. Freeman, executrix), assignor to Dorr-Oliver, Incorporated, Stamford, Conn.

Filed May 21, 1984, Ser. No. 612,502

Int. Cl.⁴ D21F *7/06, 11/00;* **G01N** *27/26, 29/00*

U.S. Cl. 73—584 **9 Claims**



5. An apparatus for determining a colloidal potential of a liquid suspension of colloidal particles comprising:

means for directing pulses of ultrasonic energy along a path within said liquid suspension;

a movable probe means for detecting a vibration potential along said path, said probe means being movable along said path between at least a first position and a second position, said probe means producing signals indicative of said vibration potential at said respective positions; and

means for combining said signals so as to derive an indication of a colloidal potential of said liquid suspension.

4,552,020

APPARATUS FOR THE SCANNING OF OBJECTS BY MEANS OF ULTRASOUND ECHOGRAPHY

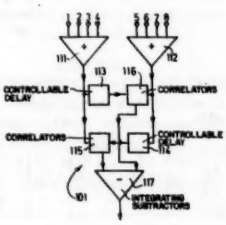
Michel J. Auphan, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,841

Claims priority, application France, Oct. 20, 1982, 82 17550; Sep. 28, 1983, 83 15422

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—602 **5 Claims**



1. Apparatus for scanning objects by ultrasound echography which comprises:

a mosaic of ultrasound transducer elements;

transmitter means connected to the transducer elements which cause the elements to repeatedly transmit ultrasound signals;

receiver means connected to the transducer elements for receiving and processing echo signals which are produced when the transmitted ultrasound signals are reflected; and

display means for displaying images which are processed and reconstructed from the signals produced in the receiver means; wherein, as an improvement:

the elements of the mosaic are grouped into 2^n subwindows, where n is a positive integer greater than one, and each subwindow is a group of adjacent transducer elements which are sufficient to form an echogram of an area of the object, and

the receiver means comprise, in functional series connection:

focusing and image scanning means for controlling directional characteristics of the mosaic;

2^n parallel signal channels, each channel processing signals from a subwindow and comprising controllable delay means and a first memory for storing a delay value correction factor which controls the delay means;

adder means which combine the outputs of the channels;

evaluation circuit means, the output of the evaluation circuit means being connected to the delay stage; and additionally comprising

$2^n - 1$ correlation means which operate to determine correction factors by adaptively correlating signals which are derived from progressive binary subgroupings of subwindows of elements, where a first subset of the $2^n - 1$ of the correlation means process signals from respective pairings of the subwindows and other correlation means compare signals from progressive pairings of the pairs of subwindows.

4,552,021

ELECTRO-SOUND TRANSDUCER ELIMINATING ACOUSTIC MULTI-REFLECTION, AND ULTRASONIC DIAGNOSTIC APPARATUS APPLYING IT

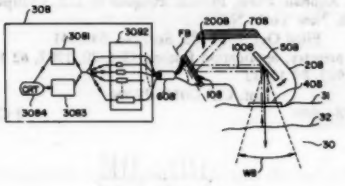
Hirohide Miwa, Kawasaki; Hajime Hayashi, Yamato; Takaki Shimura, Machida; Atsuo Iida, Yokohama; Fumihiro Namiki, Yokohama; Kenji Kawabe, Yokohama, and Narutaka Nakao, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

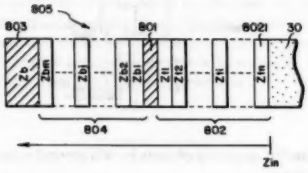
Filed Dec. 30, 1983, Ser. No. 567,372

Claims priority, application Japan, Dec. 30, 1982, 57-234070; Feb. 8, 1983, 58-19182; Mar. 10, 1983, 58-39908

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—644 **26 Claims**





1. An electro-sound transducer for ultrasonic diagnosis of a target comprising:

a piezo-electric device which transduces electric pulse signals to ultrasonic sound waves which are provided to be incident on said target and which transduces reflected sound waves, corresponding to said ultrasonic sound waves, that are incident on a surface of said piezo-electric device to provide respective electric signals;

said piezo-electric device including a plurality of transducer elements having respective surfaces for emitting said sound waves incident on said target as a synthesized sound-beam along at least one main direction, each of said directions being different from the normals to said surfaces of at least a majority of said surfaces of said transducer elements;

wherein errors in the diagnosis are avoided by limiting the transducing of said reflected sound waves which have been reflected at least once from said surface of said piezo-electric device with respect to the others of said reflected sound waves; and

wherein reflection of said respective reflected sound waves from at least the majority of said surfaces of said transducer elements of said piezo-electric device provides said limiting of said transducing.

4,552,022

SOUND DISCRIMINATOR TESTER

Elden E. DuRand, III, Crestwood, Ky., assignor to Bluegrass Electronics Inc., La Grange, Ky.

Filed May 10, 1982, Ser. No. 376,170

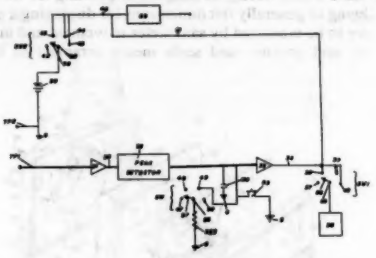
Int. Cl.⁴ G01H *3/14*

U.S. Cl. 73—647 **1 Claim**

1. A testing device to adjust operation of a sound detection device having sound transducer means to provide a signal in response to audible occurrence of said first signal and alarm means actuated by said first signal wherein said testing device includes:

(a) signal peak detector means to receive said first signal;

(b) display means to indicate the magnitude of said first and second signals and to indicate the magnitude of at least one of said first and second signals; and



(c) the invention of claim 1 wherein signal extension means are provided to extend the peak valve of the second signal for a selected time period to allow comparison of the first and second signals.

4,552,023

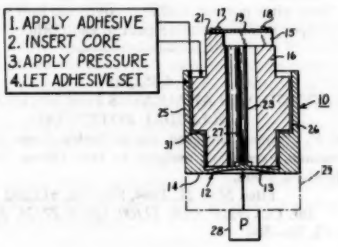
TRANSDUCER SYSTEMS WITH OVERLOAD PROTECTION

Ronald Bowman, Laguna Beach; Michael T. Zimmerman, Arcadia, and Robert A. Rich, Yorba Linda, all of Calif., assignors to Transamerica Delaval Inc., Lawrenceville, N.J.

Filed Sep. 28, 1983, Ser. No. 536,490

Int. Cl.⁴ G01L *7/08*

U.S. Cl. 73—715 **40 Claims**



1. A method of providing overload protection for a diaphragm having a deflectable diaphragm portion surrounded by a stationary diaphragm portion and connectable to a sensor, comprising in combination the steps of:

making a core of insulating material for supporting said sensor and being movable relative to said deflectable diaphragm portion;

supporting said sensor on said core;

inserting said core into said stationary diaphragm portion for connection of said deflectable diaphragm portion to said sensor, but maintaining said core movable in said stationary diaphragm portion;

establishing a mechanical interconnection between said deflectable diaphragm portion and said movable core;

rendering said core stationary relative to said diaphragm; and

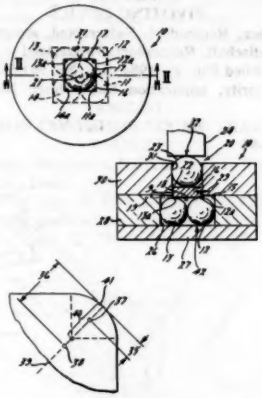
removing said mechanical interconnection by establishing between said deflectable diaphragm portion and said core a gap corresponding to a predetermined maximum diaphragm deflection, while maintaining said core stationary relative to said diaphragm.

4,552,024

DEVICE FOR DIRECTLY ANALYZING STRENGTH OF CERAMIC TOOL BITS

Robert R. Baker, and Richard L. Allor, both of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 10, 1984, Ser. No. 598,753
Int. Cl.⁴ G01N *3/08*
U.S. Cl. 73—821 **8 Claims**



1. A method of directly testing the strength of a prism shaped ceramic cutting tool bit, said bit having parallelogram sides bounded by opposed polygonal end surfaces greater in dimension than the height of any of said sides, the corners of the polygonal end surfaces each being defined by a curved sector surface of predetermined radius, comprising the steps of:

(a) locating a series of constrained members selected as to size and butted together so that such members make tangential point contact with one bit end surface supported on said members, said point contact being located along a radius bisecting a corner curved sector surface, said point contact being spaced from said curved sector surface a distance of at least one-half said curved sector surface radius but within the dimensional range of 0.01875–0.0312 inches;

(b) laterally restraining said bit supported on said member; and

(c) applying a centralized load to the opposite end surface to induce stress in said bit resulting in edge chipping fracture.

4,552,025

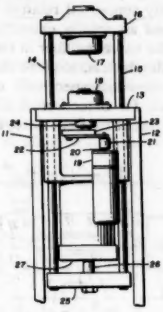
MULTIFUNCTION PROCESSABILITY TESTING METHOD AND APPARATUS

Robert I. Barker, Cuyahoga Falls; David P. King, Akron, and Henry A. Pawlowski, Seville, all of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 6, 1983, Ser. No. 529,255
Int. Cl.⁴ G01N *3/24*
U.S. Cl. 73—846 **31 Claims**

1. The method of testing a sample of viscoelastic material enclosed under pressure between two opposing temperature-controlled dies by oscillatory rotation of one die with respect to the other and measurement of the reaction torque comprising the steps of

A. holding the sample at a predetermined temperature while measuring the reaction torque at two or more oscillatory frequencies, and



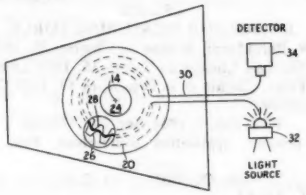
B. holding the sample at another predetermined temperature higher than that of step A while measuring the reaction torque at one or more oscillatory frequencies.

4,552,026

SENSOR FOR A VORTEX SHEDDING FLOWMETER

James K. Knudsen, South Euclid, and Marion A. Keyes, IV, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 22, 1984, Ser. No. 663,113
Int. Cl.⁴ G01F *1/32*
U.S. Cl. 73—861.24 **5 Claims**



1. In a fluid flowmeter, a bluff body adapted to induce vortex shedding when placed in a flowing fluid; means mounting said bluff body for rotation about its center of inertia; a first toothed member attached to said bluff body for rotation therewith; a second toothed member mounted in a stationary position relative to said first toothed member, the teeth of said first and second toothed members being in partial meshing relation; and an optical fiber entrained between the teeth of said first and second toothed members.

4,552,027

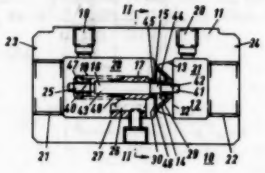
FLUID-FLOW TRANSDUCER

Donald A. Larner, Kingston-upon-Thames, England, assignor to Fluid Devices Ltd., England

Filed Mar. 1, 1984, Ser. No. 585,144
Claims priority, application United Kingdom, Mar. 3, 1983, 8305926
Int. Cl.⁴ G01F *1/26*
U.S. Cl. 73—861.53 **10 Claims**

1. A fluid-flow transducer for producing a pressure differential responsive to rate of at least normally unidirectional fluid flow, comprising: a housing forming a flow passage for the fluid; said passage having formed therein a throat which diverges progressively in the normally downstream direction; a valve member adapted and arranged for obturating the smaller end of the throat when there is no flow or very little flow; the valve member being carried by a spindle which extends in the

normally upstream direction from the throat and is slidably supported by a bearing upstream of but adjacent the throat, the bearing being fixedly supported relative to the housing by a bearing support; and an axially extending compression coil spring for biasing the valve member in the upstream direction relative to the housing to tend to close the throat; the housing having two ports therein, respectively upstream and downstream of the throat, for detection of a pressure differential induced across the throat by fluid flow; characterized in that



the housing is adapted for incorporation into a fluid flow system by having connecting means at an upstream end and a downstream end of the housing; in that the spring is arranged upstream of the valve member and acts upon an upstream end of the spindle; in that there is substantially unobstructed access through the downstream end of the housing to the throat and to the valve member; and in that the bearing engages a substantial length of the spindle closely adjacent the smaller end of the throat for very accurately aligning the valve member, particularly when the valve member is almost closing the throat.

4,552,028

DEVICE FOR MEASURING FORCE

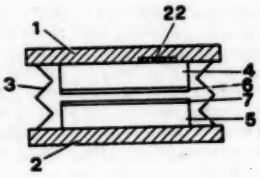
Christof W. Burckhardt, Avenue du Chateau 20, 1020 Renens; Philipp Stauber, Chemin du Saléve 15, 1004 Lausanne, and Gérard Piller, Chemin de la Crésentine 51, 1023 Crissier, all of Switzerland

Filed Feb. 8, 1984, Ser. No. 578,065

Claims priority, application Switzerland, Feb. 23, 1983, 1002/83

Int. Cl.⁴ G01L *1/14, 5/16*

U.S. Cl. 73—862.04 **6 Claims**



1. A device for measuring force comprising:

an upper rigid element and a lower rigid element;

an elastic body linking the upper and lower rigid elements;

measuring means, independent of the elastic body and integral with the rigid elements, consisting of at least one capacitive sensor comprising a first part and a second part, each part presenting a flat surface bearing at least one flat electrode, these parts being so placed that the electrodes of the first part are opposite the electrodes of the second part, separated by a dielectric;

a measuring device connected to the capacitive sensor;

the capacitive sensor including a plurality of flat electrodes, at least one electrode of one of the two parts of the sensor being laterally displaced in comparison with the electrodes of the other part, so that, depending on the combination of electrode associations and connections, the sensor acts either as a differential sensor or as a proximity sensor; and

wherein the measuring device comprises electronic means for processing the signals generated by the various electrode combinations and for measuring all the degrees of freedom of movement relative to the two rigid elements.

4,552,029

PIVOTING DEVICE

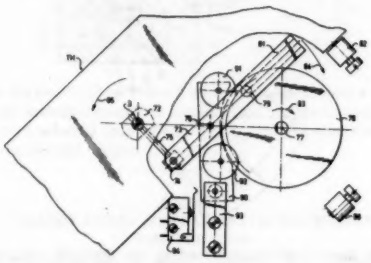
René Lüscher, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,563

Claims priority, application Switzerland, Mar. 10, 1983, 1287/83

Int. Cl.⁴ F16H *21/44*

U.S. Cl. 74—96 **4 Claims**



1. A device for pivoting a transport lever about a pivot axis between two terminal positions, comprising:

a connecting rod connected to the transport lever for rotation therewith and disposed perpendicular to the pivot axis of said transport lever;

a pivotable intermediate lever having a longitudinal slot;

a bearing socket mounted on said intermediate lever and engaged with said connecting rod for axial movement therein, said bearing socket being pivotable about an axis that is parallel to a pivot axis of said intermediate lever; and

a rotatable crank plate having a pin engaged in said slot on said intermediate lever.

4,552,030

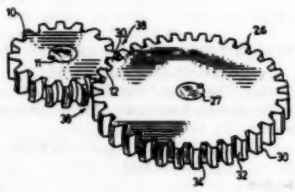
GEAR DRIVE

Joseph Szecsei, 2555-8th Concession Rd., R.R. #3, Windsor, Ontario, N9A 6Z6, Canada

Filed Jun. 23, 1983, Ser. No. 507,242

Int. Cl.⁴ F16H *55/08*

U.S. Cl. 74—462 **3 Claims**



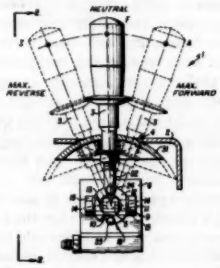
1. A gear train comprising, in combination, a first cylindrical gear wheel having a plurality of teeth formed equispaced therearound, each tooth having a transversely concavo-convex shape with a convex side surface and an opposite concave side surface terminating in a square end surface having a uni-

form width, and a second cylindrical gear wheel having a plurality of teeth equispaced thereabout with the same circumferential spacing as the spacing of the teeth on the first cylindrical gear wheel, each tooth of said second gear wheel having a concavo-convex shape with a convex side surface and an opposite concave side surface terminating in a square end surface having a uniform width, the said teeth of the said gear wheels having opposite convex and concave side surfaces with the same radius of curvature and having the same uniform width, the periphery of each of said gear wheels having a square transverse cross-section, and means for rotatably mounting said cylindrical gear wheels for meshing of the gear teeth with each other.

4,552,031
DEVICE FOR CONTROLLING THE TRAVEL OF A VEHICLE

Rino O. Barbagli, Borgaretto, Italy, assignor to Fiatallis Europe S.p.A., Torino, Italy

Filed Apr. 25, 1983, Ser. No. 488,413
Claims priority, application Italy, May 3, 1982, 67579 A/82
Int. Cl.⁴ G05G *5/04, 7/00*
U.S. Cl. 74—473 R **6 Claims**



1. A transmission shifting mechanism for controlling the operation of a vehicle transmission operable through rotational movement of a control shaft by corresponding rotational movement of a shift lever in a predetermined path of movement between forward and reverse vehicle motion-defining directions, including a neutral holding position during normal operation of the vehicle, and adapted to be shifted directly between the forward and reverse vehicle motion-defining directions bypassing the neutral stop position in an emergency upon overcoming a biasing force urging the shift lever to move in the predetermined path of movement, the shifting mechanism comprising

a shift lever operatively connected to a control shaft for effecting movement of a vehicle in accordance with the positioning of the control shaft in response to the movement of said shift lever,

said shift lever having a hub portion connected to said control shaft for effecting rotational movement of said control shaft in response to rotational movement of said shift lever and effecting pivotal movement of said shift lever relative to said control shaft,

said hub portion having formed therein first and second motion-limiting means for limiting the rotational movement of said shift lever,

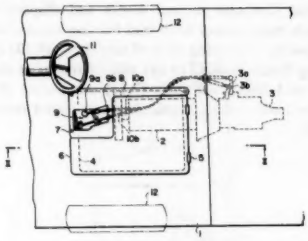
first and second stop means mutually exclusively positioned adjacent said first and second motion-limiting means and extendable into engagement therewith to stop the rotational movement of said shift lever upon engagement of both of said stop means with both of said motion-limiting means,

said first and second stop means being mutually exclusively released from engagement with said motion-limiting means upon pivotal movement of said shift lever relative to said control shaft thereby allowing rotational movement of said shift lever within the limits defined by the engagement of one of said stop means engaging one of said motion-limiting means.

4,552,032
SHIFT LEVER DEVICE

Takao Kanai, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 17, 1983, Ser. No. 476,152
Claims priority, application Japan, Dec. 20, 1982, 57-192364[U]
Int. Cl.⁴ G05G *9/16*
U.S. Cl. 74—473 R **10 Claims**



1. A shift lever device for a motor vehicle having an engine and transmission positioned under a floor panel provided with a service hole for maintenance or inspection of said engine, comprising:

a cover for said service hole allowing access to said transmission and engine;

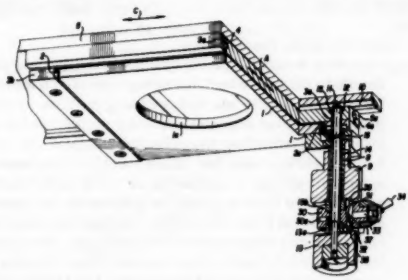
a shift lever secured to said cover; and

a flexible long means connected to said shift lever to operate said transmission, said cover with said shift lever attached thereon being removable without disengaging said shift lever from said cover.

4,552,033
DRIVE SYSTEM FOR A MICROSCOPE STAGE OR THE LIKE

Heinz Märzhäuser, Wetzlar, Fed. Rep. of Germany, assignor to Gebr. Märzhäuser Wetzlar oHG, Wetzlar, Fed. Rep. of Germany

Continuation of Ser. No. 269,787, Jun. 2, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 598,359
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025974; Oct. 6, 1980, 3037710; Oct. 6, 1980, 3037741
Int. Cl.⁴ G05G *11/00*; F16H *13/02*; G02B *21/26*
U.S. Cl. 74—479 **9 Claims**



1. A drive system for an x-y stage of a microscope or similar instrument having a first displaceable slide and a second slide displaceable at an angle to said first slide, first stationary slide

guide means for said first displaceable slide and a second stationary slide guide means for said second slide comprising:

(a) a friction wheel connection having first and second friction wheels (7,11) and first and second friction tracks (6,10) arranged respectively between said first slide (3) and said first stationary slide guide means (1) on the one hand and between said first slide (3) and said second slide (5);

(b) said first friction wheel (11) having a first actuation knob (13) and a first common solid shaft (12);

(c) said second friction wheel (7) having a second actuation knob and a second common hollow shaft (8) coaxial to said first shaft;

(d) first and second spring force means (15,16) biasing each of said first and second shafts and respective friction wheels into contact with said friction tracks; and

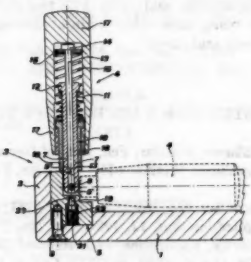
(e) means for displacing each of said shafts (8,12) against said spring force means (15,16) and in the axial direction so that said friction wheels (7,11) connected to them no longer make contact with their associated friction tracks (6,10).

4,552,034

TIPPING HANDLE FOR CONTROL HANDWHEELS

Bertani, Alberto, Milan; Piercarlo Mariani, and Davide Lissoni, both of Monza, all of Italy, assignors to Elesa S.p.A., Milan, Italy

Filed Feb. 7, 1983, Ser. No. 464,714
Claims priority, application Italy, Feb. 12, 1982, 19644 A/82
Int. Cl.⁴ G05G *1/10*
U.S. Cl. 74—547 **3 Claims**



1. A safety handle for a handwheel which is movable between an operating position and a retracted position, comprising:

(a) an elongated handle;

(b) pivoting means for pivotally connecting one end of the handle to the handwheel, including a pin clutch means for locking said handle into said operating position when said handle is pivoted into said operating position and a sufficient force is applied along the longitudinal axis of the handle, wherein said pin clutch includes a resilient element for applying a counter-force when said longitudinally oriented force is applied to said handle, and wherein said pin clutch locks said handle into said operating position when said longitudinal force overcomes the counter-force applied by said resilient element, and wherein said counter-force unlocks said pin clutch when said longitudinal force does not overcome said counter-force, and

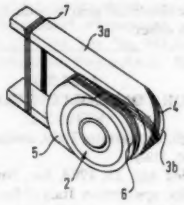
(c) a biasing means for pivoting said handle into said retracted position when said longitudinal force is removed from said handle.

4,552,035

REINFORCED CONNECTING LINK MEANS

John B. Skipper, Lutterworth, England, assignor to Dunlop Limited, London, England

Filed Jun. 24, 1983, Ser. No. 507,730
Claims priority, application United Kingdom, Jul. 1, 1982, 8218980
Int. Cl.⁴ G05G *1/00*
U.S. Cl. 74—581 **30 Claims**



1. Link means for connecting two components comprising a pair of attachment members spaced relative to one another along the longitudinal axis of the link means and a reinforcement structure connecting said attachment members for the transmission of both tension and compression loads therebetween, said reinforcement structure comprising an endless band of reinforcement material extending between said attachment members, said band having two side portions disposed to extend generally in the direction of the longitudinal axis of the link means and two end portions each disposed around a respective attachment member each said attachment member having in a direction perpendicular to said longitudinal axis of the link a length which is greater than the transverse width of said reinforcement structure whereby said attachment member extends beyond either side of a respective end of said reinforcement structure, and respective fastening means comprising reinforcement material extending to either side of said reinforcement structure and wrapped around each attachment member and the adjacent end portion of said band at each side of the reinforcement structure for securing said attachment members to said bank whereby the link means is able to withstand applied tension or compression loads.

4,552,036

AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLES

Toshio Takano, Hamuramachi, and Toshio Kobayashi, Koganei, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,771
Claims priority, application Japan, Sep. 13, 1979, 54-117729
The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.
Int. Cl.⁴ F16H *37/06*; F01N *1/00*; F16D *23/10*
U.S. Cl. 74—705 **9 Claims**

1. An automatic transmission for an automotive vehicle having front wheels and rear wheels comprising

a torque converter connected to a crank shaft of an engine of said automotive vehicle,

an automatic transmission means connected to a turbine shaft of said torque converter, said automatic transmission means having a planetary gear and a plurality of fluid operated means for producing various operational ranges,

a final reduction gear means for transmitting an output of said automatic transmission means to the front wheels of said automotive vehicle,

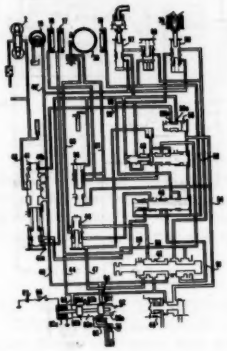
a fluid operated multiple-disk clutch means for transmitting the output of said automatic transmission means to the rear wheels,

a pressure oil control means for operating said fluid operated means in said automatic transmission means,

said pressure oil control means including,

a pressure regulator valve means for producing line pressure according to operational conditions of said engine,

a changeover valve means when actuated for operatively connecting a conduit for the line pressure to said fluid operated multiple-disk clutch means,



a manual operating means for being manually operated and actuating said changeover valve means, and

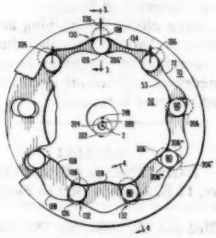
conduit means for applying said line pressure to said changeover valve means for actuating said changeover valve means when said line pressure exceeds a predetermined value.

4,552,037

RETAINER FOR EPICYCLIC TRANSMISSION

Robert G. Distin, Jr., and Thomas J. Lang, both of Louisville, Colo., assignors to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,932
Int. Cl.[4] F16H *1/28*
U.S. Cl. 74—805 **13 Claims**



1. A retainer (96) for retaining and controlling a plurality of rollers (80) rollingly engaging and transmitting torque between conjugate epitrochoidal-like shaped and hypotrochoicallike shaped races (53, 72) in an epicyclic speed reducing transmission, wherein means (30) are provided for orbiting one of said races (53) and said retainer, said retainer generating a centrifugal force as it orbits, comprising:

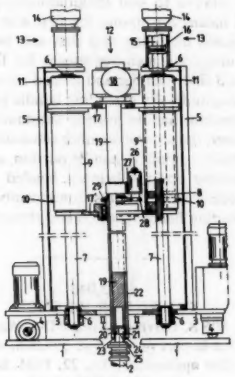
a plurality of bearing surfaces (206', 210) which bearingly load a radial innermost cylindrical surface closest to an axis (2) of said transmission of all of said rollers which are located at and immediately adjacent to a top dead center position of said orbiting means with a portion of said centrifugal force and which maintain a radial outermost cylindrical surface furtherest from said axis of all of said rollers located at an immediately adjacent a bottom dead center position of said orbiting means unloaded from said centrifugal force.

4,552,038

REMOTE CONTROLLED BOLT REMOVING APPARATUS FOR BOLTS SECURING THE HEAD OF A REACTOR PRESSURE VESSEL

Siegfried Heiermann, Waltrop, and Hans Lachner, Herne, both of Fed. Rep. of Germany, assignors to Klockner-Becorit GmbH, Castrop-Rauxel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 285,087, Jul. 9, 1981, abandoned. This application Oct. 14, 1983, Ser. No. 542,045
Int. Cl.[4] B25B *29/02*
U.S. Cl. 81—57.38 **6 Claims**



1. A bolt removing apparatus for removing bolts securing the head of a reactor pressure vessel, said apparatus comprising:

(a) a vertically moveable bolt rotating device which includes means for gripping and turning a bolt to be removed;

(b) at least one hydraulic cylinder system, including a cylinder, a piston and a piston rod, coupled to said bolt rotating device for vertically moving said device; and

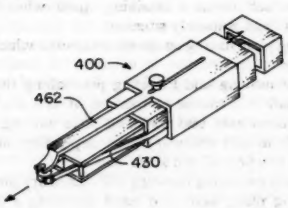
(c) means for causing rotational movement between said cylinder and piston of said hydraulic cylinder system as said bolt rotating device is moved vertically by said hydraulic cylinder system.

4,552,039

NUT AND WASHER HOLDING ADJUSTABLE WRENCH

George W. Fisher, 5915 Daybreak Ter., Baltimore, Md. 21206

Filed Feb. 24, 1984, Ser. No. 583,191
Int. Cl.[4] B25B *13/52*
U.S. Cl. 81—64 **8 Claims**



1. In a wrench system having means for adjustably holding a nut, means for holding a washer in alignment with the nut for

attachment of the washer and nut on a fastener such as a bolt, and a longitudinally extending handle portion, the improvement comprising: the means for adjustably holding a nut including: first and second jaws, means resiliently spacing the first and second jaws relative to each other; said means for holding a washer including: at least a first arm, means for biasing the first arm toward said first and second jaws, said first arm having a slotted end for receiving a said fastener therein, said means for resiliently spacing the first and second jaws relative to each other comprising: said first and second jaws having respective resilient portions thereof extending to and affixed to said longitudinally extending handle portion, a first member slidable relative to said longitudinally extending handle portion, the first member having a protrusion between said respective resilient portions, a respective part of the first member outboard each respective resilient portion; a second member slidable relative to said longitudinally extending handle portion, said means for biasing the first arm toward said first and second jaws, including said first arm being resilient and affixed to said second member; means for fixing the slidable position of said first member and of said second member relative to said longitudinally extending handle portion, the longitudinally extending handle portion substantially surrounding the first member, the second member substantially surrounding the longitudinally extending handle portion, and the means for fixing the slidable position being a headed screw extending through respective slots in said second member and said longitudinally extending handle portion and threaded into said first member.

4,552,040

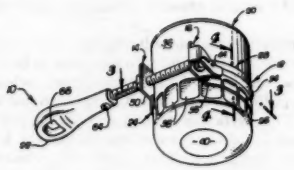
OIL FILTER WRENCH

Hyo J. Bang, 805 S. Cerritos, Ave., #D-1, Azusa, Calif. 91702

Continuation-in-part of Ser. No. 599,008, Apr. 11, 1984, abandoned. This application Oct. 22, 1984, Ser. No. 663,305

Int. Cl.⁴ B25B *13/52*

U.S. Cl. 81—65 **21 Claims**



1. An adjustable oil filter wrench, comprising:

a handle;

a threaded shaft securely attached to and extending from said handle, said shaft terminating at an expanded head;

a stationary plate having an enlarged aperture through which a portion of said shaft which is generally adjacent said expanded head freely passes, and an integral retainer strap which forms a retaining space wherein said expanded head is loosely situated;

a traveling plate having an aperture through which said shaft extends;

means for moving said traveling plate along the length of said shaft in response to rotation of said shaft about its longitudinal axis, said traveling plate moving toward or away from said stationary plate depending on the direction of rotation of said shaft; and

a rigid band extending between said stationary plate and said traveling plate, said rigid band including a plurality of sequential and incremental flat surfaces extending generally along one edge thereof, and a file-like inner gripping surface strengthened by a V-shaped ridge forming the remainder of said band.

4,552,041

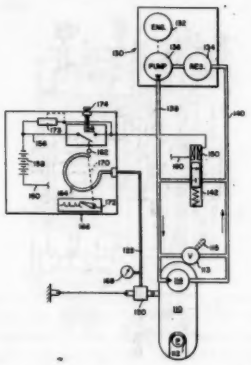
POWER TONGS CONTROL SYSTEM

William E. Coyle, Sr., Houma, La., assignor to Bilco Tools, Inc., Houma, La.

Filed Apr. 21, 1983, Ser. No. 487,048

Int. Cl.⁴ B25B *23/14*

U.S. Cl. 81—470 **12 Claims**



1. In a power tongs control system of the type including power tongs having a hydraulic motor thereon, and a power unit having a high pressure pump connected to the tongs motor by a pair of hydraulic lines, the system further including a snub line for restraining the tongs against rotation, and a hydraulic load transducer attached to the snub line so that the hydraulic transducer produces a pressure output—proportional to torque developed by the tongs—for selectively opening or closing a shunt valve connected between said hoses, the improvement comprising:

a solenoid actuator for the shunt valve,

torque indicating means including a Bourdon tube supported at one end and connected to said transducer output, and

a limit switch adjustably supported by said means adjacent the free end of the Bourdon tube so that said switch is closed by said tube when the pressure within the tube reaches a predetermined level,

said switch, when closed establishing an electrical connection between a battery and the shunt valve solenoid whereby operation of the tongs is automatically halted when a predetermined torque corresponding to said predetermined pressure is reached.

4,552,042

TIGHTENING APPARATUS

Dale A. Beymer, 11 E. Avenida De Las Flores, Thousand Oaks, Calif. 91360

Filed Jul. 30, 1984, Ser. No. 635,800

Int. Cl.⁴ B25B *23/14*

U.S. Cl. 81—476 **6 Claims**

1. A tightening apparatus comprising:

a spindle, said spindle having a socket adapted to be rotatably connected to a shaft;

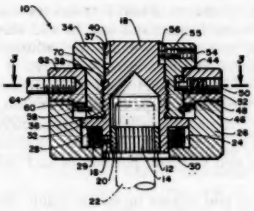
a housing located about said spindle, said spindle being capable of pivoting relative to said housing;

a spring chamber formed between said spindle and said housing, a spring assembly located within said spring chamber, said spring assembly exerting a force between said spindle and said housing;

a nut threadably mounted on said spindle, said housing being located about said nut, said nut being capable of rotative movement relative to said housing, said nut being lineally fixed in position relative to said housing, rotation of said nut causes lineal movement of said spindle varying the size

of said spring chamber hence altering the compression of said spring assembly changing said force; and

handle means attached to said housing, said handle means



facilitating manual rotation of said housing which will also cause rotation of said spindle tending to produce a tightening force, upon said tightening force reaching a certain value said housing pivots relative to said spindle.

4,552,043

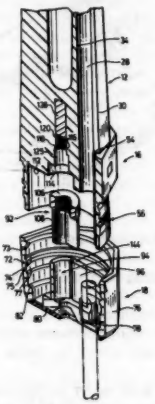
MULTIPLE BIT SCREWDRIVER WITH IMPROVED CHUCK ARRANGEMENT

Antonio Corona, and Franco O. Corona, both of 14 Simcoe Rd., Kettleby, Ontario L0G 1J0, Canada

Filed Dec. 14, 1984, Ser. No. 681,886

Int. Cl.[4] B25G *1/08*

U.S. Cl. 81—490 **13 Claims**



1. In a multibit screwdriver having a handle with a central longitudinal axis, a bit selector cup rotatably mounted at an end of said handle to rotate about said central axis, a plurality of bits provided peripherally of said handle in a circular pattern about said handle axis, each bit being provided in said handle to extend essentially parallel to said handle's axis, a chuck provided at said end of said handle, said chuck being aligned with said handle axis for receiving a bit end and securing it against rotation, said cup having a continuous side wall with an interior surface spaced radially outwardly of the radial location of said circular pattern of bits and a closed cup end, an elongate slot extending from a central portion of said cup and radially outwardly to the location of said bits in said handle, said cup being rotatable to position said slot in register with any desired bit in said handle, said slot in said cup being of sufficient width and length to permit outward withdrawal of a bit shaft from said handle in a direction generally parallel with said handle axis, means for retaining a selected tool bit end in said cup, said bit end being movable along said slot towards said cup center into alignment with said chuck for insertion of said bit end into said chuck, said chuck having a bore formed within said handle, said bore presenting a plurality of internal operative faces for engaging corresponding external operative faces provided on said bit end, the number of said operative faces being equal to or a multiple of the number of bits provided in said handle to facilitate thereby the insertion of a selected bit end into said chuck bore.

4,552,044

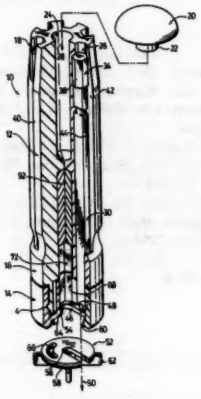
MULTIBIT SCREWDRIVER WITH IMPROVED BIT INSERTION

Antonio Corona, and Franco O. Corona, both of 14 Simcoe Rd., Kettleby, Ontario, Canada L0G 1J0

Filed Feb. 12, 1985, Ser. No. 700,830

Int. Cl.[4] B25G *1/08*

U.S. Cl. 81—490 **20 Claims**



1. In a multibit screwdriver having a handle with a central longitudinal axis, a bit selector cup rotatably mounted at an end of said handle to rotate about said central axis, a plurality of bits provided peripherally of said handle in a generally circular pattern about said handle axis, each bit being provided in said handle to extend essentially parallel to said handle's axis, a chuck provided at said end of said handle, said chuck being aligned with said handle axis for receiving a bit end and securing it against rotation, said cup having a continuous side wall with an interior surface spaced radially outwardly of the radial location of said circular pattern of bits and a closed cup end, an elongate slot extending from a central portion of said cup end and radially outwardly to the location of said bits in said handle, said cup being rotatable to position said slot in register with any desired bit in said handle, said slot in said cup having opposing walls sufficiently spaced apart to permit outward withdrawal through said slot of a bit shaft from said handle in a direction generally parallel with said handle axis, means for retaining a selected tool bit end in said cup, said bit end being movable along said slot towards said cup center into alignment with said chuck for insertion of said bit end into said chuck, said bit shaft having a slot wall engagement means for engaging at least one of said slot walls to prevent thereby any significant rotation of said bit relative to said slot as said withdrawn bit is moved along said cup slot to said cap centre into alignment with said chuck, said handle having a plurality of channels for receiving a corresponding plurality of said bits, each of said channels having means for cooperating with a respective said bit to align said bit slot wall engagement means with corresponding said at least one slot wall when said cup slot is registered with said respective bit to permit withdrawal thereof, said bit slot wall engagement means being positioned on said bit shaft to engage said at least one slot wall on with-

drawal of said bit from said channel prior to said alignment means in said channel disengaging said withdrawn bit, said alignment means predetermining the orientation of said bit end relative to said chuck whereby said slot engagement means maintains said predetermined bit end orientation for direct insertion of said bit end in said chuck, said bit end having integrally formed therewith means for defining a shoulder which contacts said opposing slot walls, said shoulder means being said means for retaining said bit end within said cup, said external operative faces of said bit end projecting outwardly relative to said bit shaft, said channel alignment means comprising recessed portions to receive said bit end outwardly projecting portions, a circular flange depending from said handle end and having a plurality of slots extending therethrough, each of said slots being radially aligned with a respective said recessed portion of said channel, said slot in said flange receiving one of said outwardly projecting portions upon withdrawal of said bit from a corresponding said channel.

4,552,045

POSITIONING DEVICE

Mamoru Inoue; Shoji Hara; Morimichi Hasegawa, all of Hirakata, and Kiyokazu Imanishi, Higashi Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

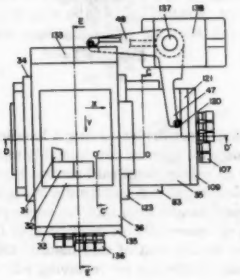
PCT No. PCT/JP82/00267, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/00302, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 14, 1982, Ser. No. 486,292

Claims priority, application Japan, Jul. 15, 1981, 56-111475; Jul. 15, 1981, 56-111476

Int. Cl.⁴ B23B *21/00, 3/28*

U.S. Cl. 82—21 R **4 Claims**



1. A positioning device comprising:

a frame;

a first table mounted on said frame for sliding movement with respect thereto in first and second opposite directions;

a second table mounted on said first table for sliding movement with respect thereto in third and fourth directions perpendicular to said first and second directions;

first and second cams mounted for rotation on said frame;

first and second pivotally mounted levers having respective first ends contacting said first and second cams, respectively, and respective second ends having rollers adapted to abut ends of said first and second tables, respectively;

first means mounted on said frame for biasing said first table in said first direction into abutment with said roller of said second end of said first lever;

first stop means on said frame and said first table and defining a stopping position for limiting the movement of said first table in said first direction;

second means on said first table for biasing said second table in said third direction into abutment with said roller of said second end of said second lever;

second stop means on said first and second tables and defining a stopping position for limiting the movement of said second table in said third direction;

means operatively connected to said first and second cams for rotating said first and second cams and thereby for pivoting said first and second levers, respectively, to control the positions of said first and second tables in said first and second directions and in said third and fourth directions, respectively, under the influence of said first and second biasing means, respectively;

means operatively connected to at least one of said stop means for rendering inoperative said one stop means when the respective said cam allows the respective said table to be moved by the respective said biasing means beyond the respective said stopping position of said one stop means; and

at least one of said biasing means including means for interrupting said one biasing means and for moving the respective said table away from abutment with said roller of the respective said lever.

4,552,046

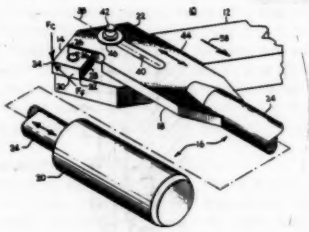
CUTTING TOOL

David M. Dombrowski, Peabody, and Kenneth J. Anastasi, Beverly, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 25, 1984, Ser. No. 613,934

Int. Cl.⁴ B23B *29/04*

U.S. Cl. 82—36 A **25 Claims**



1. A cutting tool comprising:

a shank;

an indexable cutting tool insert having a side surface and a tip;

means rotatably connecting said insert to said shank including a pivot extending between said shank and said insert for allowing said insert to rotate with respect to said shank;

means to index said insert comprising an index member having a locking surface and a cam lobe thereon; and

means movably mounting said index member to said shank;

said indexing means being effective for rotating said insert upon extension of said index member so that said cam lobe pushingly engages said insert side surface at said insert tip, and locking said insert in a stationary cutting position upon retraction of said index member so that said locking surface is securely positioned against said insert side surface.

4,552,047

APPARATUS FOR CUTTING TUBING INTO PREDETERMINED LENGTHS

Steven L. Stroup, 602 W. Washington, Bluffton, Ind. 46714

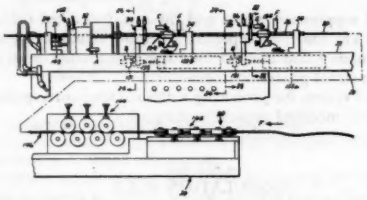
Division of Ser. No. 191,319, Sep. 26, 1980, Pat. No. 4,411,179. This application Jul. 11, 1983, Ser. No. 512,789

Int. Cl.⁴ B23B *5/14*

U.S. Cl. 82—102 **10 Claims**

1. Apparatus for cutting metallic tubing into predetermined lengths comprising a stationary supporting frame, means on

said frame for moving a straight length of tubing unidirectionally intermittently along a straight path in alignment with the longitudinal axis of said tubing means for cutting off said tubing while it is stationary between movements; said moving means including two spaced feeder mechanisms mounted for reciprocable movement on said frame, means for reciprocating simultaneously said feeder mechanisms in opposite directions between predetermined limits, said feeder mechanism including means for gripping said tubing during movement of the feeder mechanism in a forward direction and releasing said tubing during movement in the reverse direction; each said feeder mechanism and the gripping means thereof comprising a hollow gripping collet having resilient annularly arranged clamping segments radially movable inwardly to grip tubing received thereby, a clamping sleeve surrounding said collet and movable axially with respect thereto, said sleeve and collet segments having camming means thereon which force said segments inwardly in response to relative movement of said



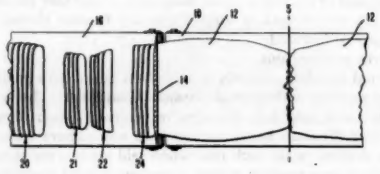
sleeve and collet in one direction and releases said segments for relative movement in the opposite direction, a clamping block operatively carried by said frame for reciprocating movement, said collet being affixed to said clamping block, said clamping block having a cylinder cavity therein which receives said sleeve for reciprocation, said sleeve being in the form of a piston and defining two opposed variable volume chambers within said cylinder cavity adapted to be connected alternatively to fluid under pressure and exhaust for alternately operating and releasing said collet segments, said reciprocating means including two double acting power cylinders, one for each feeder mechanism, mounted on said frame and each having a piston rod connected to each said clamping block, and a control system for operating said power cylinder and the clamping sleeves of said feeder mechanisms oppositely such that while one feeder mechanism is moving in said forward direction it has its collet clamped onto said tubing while the other feeder mechanism is moving in the reverse direction and has its collet released.

4,552,048

AUTOMATIC TRIMMING FEATURE FOR A SLICING MACHINE

Gary L. Wallace, Jeffersontown, Ky., and Frank S. Kasper, Orland Park, Ill., assignors to AMCA International Corporation, Hanover, N.H.

Filed May 17, 1983, Ser. No. 495,403
Int. Cl.⁴ B26D *5/20*
U.S. Cl. 83—23 **19 Claims**



12. In a slicing machine in which a product is fed to a motor driven slicing blade and sliced product is conveyed away from the blade, a method for visually segregating irregular slices from the leading edge of the product, comprising the steps of:

monitoring the slicing blade motor current;

detecting when the amplitude of said current exceeds a threshold value; and

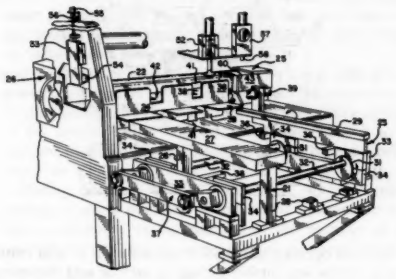
interrupting the slicing of the product in response to the current exceeding the threshold value while continuing to convey sliced product away from the slicing blade.

4,552,049

AUTOMATIC FEEDING OF ELONGATED PRODUCTS

Martin J. Matzinger, and Daniel L. Orloff, both of Madison, Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Aug. 26, 1983, Ser. No. 526,715
Int. Cl.⁴ B26D *7/06*
U.S. Cl. 83—27 **22 Claims**



12. A method for hanlding elongated food products, comprising:

receiving one or more elgonated products on a platform surface;

transporting the elongated products along the platform surface by moving the elgonated products with respect to the platform surface and without rotating the elgonated products, said moving being in a direction generally transverse to the respective longitudinal axis of the elongated products, and said movement being in an escapement position wherein said transporting step includes lifting the elongated products and moving same towards said escapement position;

dispensing the elongated products one at a time from said escapement position in a direction generally transverse to their respective longitudinal axis wherein said dispensing step includes rotating said elongated product along an axis that is generally parallel to the longitudinal axis of the elongated product; and

feeding the dispensed elongated product by moving same through a feeding path in a direction generally along the longitudinal axis thereof wherein said feeding step includes gripping the trailing end of the elongated product.

4,552,050

DIE, PLATEN AND JOINING MEANS FOR ATTACHING SAID DIE TO SAID PLATEN

Peter Grefe, Laguna Beach, Calif., assignor to Shur-Lok Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 363,274, Mar. 29, 1982,. This application Feb. 9, 1984, Ser. No. 578,762
Int. Cl.⁴ B26F *1/14*
U.S. Cl. 83—685 **14 Claims**

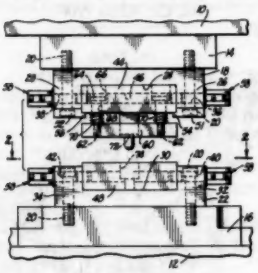
1. In a combination of a die set and set of supports for holding the dies of said die set, means for connecting each die of said die set to one of said supports and means for causing

relative movement between said supports so as to result in relative movement between said dies of said die set the improvement which comprises:

said supports including a first platen and a second platen, each of said platens including a die receiving recess located therein, one of said dies of said set of dies at least partially locatable within said recess of said first platen and the other of said dies of said set of dies at least partially locatable within said recess in the second of said platens;

each of said platens further including a wall, said wall located between the outer periphery of said respective platen and said recess of said respective platen;

said connecting means including said walls on each of said respective platens having a hole extending through said



wall and opening into said recess on each of said respective platens and further including each of said dies of said set of dies having a hole which aligns with the hole in said wall of the respective platen when said die of said set of dies which is at least partially locatable in said recess in said respective platen is located in said respective recess;

said connecting means further including a least two expandable diameter fastener means each having a generally cylindrical shape capable of being manipulated so as to expand to a greater diameter at a point along its length, one of said fastener means extending into said aligned holes in each of said dies and said wall of said respective platens with said fastener means expanded at said point to said greater diameter to tightly fit at said point within said aligned holes to fixedly attach each of said dies to their respective platens.

4,552,051

ELECTRONIC MUSICAL INSTRUMENT WITH KEY TOUCH DETECTOR AND OPERATOR MEMBER

Chifumi Takeuchi, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 25, 1983, Ser. No. 545,067
Claims priority, application Japan, Nov. 2, 1982, 57-193140
Int. Cl.[4] G10H *1/02*
U.S. Cl. 84—1.24 **25 Claims**

1. An electronic musical instrument comprising:

keyboard means including a plurality of keys;

tone signal generating means for producing a musical tone signal corresponding to a depressed one of said plurality of keys;

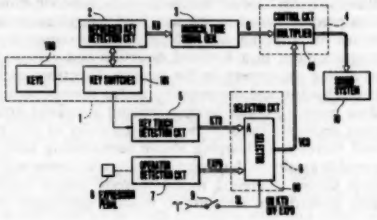
a key touch detector for generating a key touch signal concerning a key depression operation of said depressed key;

an operator member for controlling musical tone characteristics of said musical tone signal;

operator detection means for generating an operator detecting signal concerning said operator member when it is operated;

designating means, controlled separately from said operator detection means, for designating one of said key touch signal and said operator detecting signal to be suppressed;

suppression circuit means for suppressing the signal designated by said designating means, an output resultant from the combination of the designated signal suppressed by



said suppression means and the non-designated other of said key touch and operator detecting signals being used to modify said musical tone signal outputted from said tone signal generating means; and

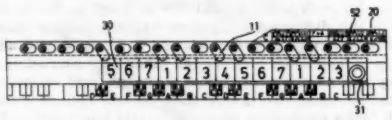
a sound system for producing a musical tone corresponding to said modified musical tone signal.

4,552,052

MODULATION RULE

Chung-Yang Lee, 4th Fl., No. 8, Chung-Yang Rd., Hsin-Tien, Taipei Hsien, Taiwan

Filed Aug. 21, 1984, Ser. No. 642,818
Int. Cl.[4] G09B *15/02*
U.S. Cl. 84—473 **5 Claims**



1. A modulation rule capable of indicating the scale of a given keynote, which comprises:

a first member including a first portion provided with first divisions, said first divisions being marked with a key or a pair of enharmonic keys and an indication of the notes that should be lowered or raised at said key or pair of enharmonic keys;

a second portion located under said first portion, said second portion being marked with a keyboard having whole-tone keys and semitone keys arranged in a similar manner to that of a keyboard musical instrument;

each of said first division having a whole-tone key corresponding to each whole-tone key of said keyboard;

a third portion disposed between said first portion and said second portion, said third portion having a plurality of adjustable indicating elements provided thereon and positioned to correspond to said whole-tone keys of said keyboard, said indicating element being capable of being adjusted to provide a visual indication of whether the note of the corresponding whole-tone key thereto should be raised or lowered;

a fourth portion; and

a second member movably mounted on said fourth portion and marked with second divisions, said second divisions align with said first divisions respectively, each of said second divisions being marked with one numeral note of the diatonic scale such that when said second member is moved to a position where a certain second division is aligned with a first division marked with the given key, and said indicating elements are adjusted to provide the

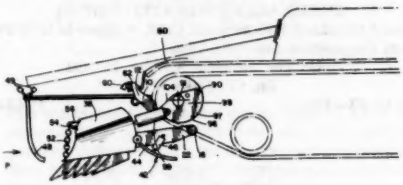
visual indication, the scale and positions of notes according to the scale of the given key are shown by the rule.

4,552,053

MINEFIELD CLEARING APPARATUS

Simcha Bar-Nefy, Omer, and Michael V. Tiomkin, Beer-Sheva, both of Israel, assignors to Israel Aircraft Industries, Ltd., Lod, Israel

Filed May 19, 1983, Ser. No. 496,164
Claims priority, application Israel, May 19, 1982, 65824
Int. Cl.⁴ F41H *11/12*
U.S. Cl. 89—1.13 **4 Claims**



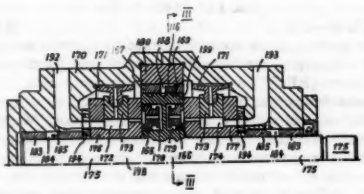
1. Apparatus for clearing mines comprising:
a frame mountable onto a tank for selectable positioning in a raised or lowered orientation;
apparatus mounted onto said frame for raising and shunting aside mines including a plow portion and a plurality of vertically disposed blades which during operation are disposed below the ground surface and are operative to raise mines buried in the ground, said blades having the tendency to dig deeper and deeper into the ground surface unless restrained;
a gliding surface supporting said frame in its lowered orientation, for operation of said plow portion and disposition of said blades below the ground surface, said gliding surface being disposed rearwardly of said plow portion and plurality of blades;
hydraulic positioning means for governing the orientation of said gliding surface relative to said frame; and
a ground surface sensor mounted on said tank and providing control instructions to said hydraulic positioning means for maintaining the blades at a predetermined operating depth relative to the ground surface.

4,552,054

RADIAL PISTON MACHINE, EMPLOYING A MEDIAL ROTOR BEARING

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Division of Ser. No. 282,990, Jul. 14, 1981, abandoned, and Ser. No. 232,935, Feb. 9, 1981, abandoned, which is a division of Ser. No. 911,246, May 31, 1978, abandoned, and Ser. No. 910,809, May 30, 1978, abandoned. This application Jan. 31, 1984, Ser. No. 575,621
Int. Cl.⁴ F01B *13/06*
U.S. Cl. 91—492 **4 Claims**



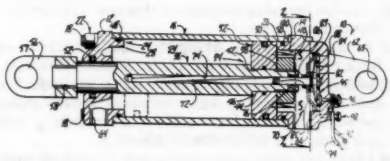
1. A radial chamber machine,
wherein fluid flows through the individual working chambers of a plurality of working chamber groups which are provided in at least one rotor, while said rotor is revolvingly borne in a housing,
wherein said rotor includes at least one pair of working chamber groups and a medial rotor portion between the two groups of said pair of working-chamber groups,
wherein a radial bearing is provided on said medial portion of said rotor and kept in said housing to carry the major portion of the radial load of said rotor,
wherein said medial rotor bearing forms a fluid bearing,
wherein said fluid bearing includes an outer body provided and borne in said housing, which forms an inner face and said medial rotor portion is associated to an outer face,
wherein said faces are cylindrical faces of substantially equal diameters but are provided with a respective clearance between then to permit said linner face to revolve in said outer face, while fluid is passed into said clearance to provide the bearing of said inner face on a fluid film between said faces,
wherein a bearing sleeve is provided around said medial rotor portion to be located between said inner face and said medial portion and to form on the outer periphery of said sleeve said outer face, and;
wherein said outer face is interrupted by a plurality of fluid pressure pockets, which extend into said sleeve, which are communicated to respective spaces of respective pressure of the machine, and which are equal in number to the number of said working chambers in one of said working chamber groups whereby said pockets form with surrounding portions of said outer face, which comprise sealing lands, a plurality of individual hydrostatic bearings, corresponding in number to the number of said working chambers in one of said working chamber groups.

4,552,055

POWER CYLINDER WITH INTERNALLY MOUNTED POSITION INDICATOR

W. John Foxwell, Troy, Mich., assignor to Prince Manufacturing Company, Sioux City, Iowa

Division of Ser. No. 232,844, Feb. 9, 1981, Pat. No. 4,386,552, which is a continuation-in-part of Ser. No. 159,735, Jun. 16, 1980, abandoned. This application Jun. 6, 1983, Ser. No. 501,638
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.⁴ F01B *25/26*
U.S. Cl. 92—5 R **17 Claims**



1. An improvement in a power cylinder assembly comprising an elongated cylinder having opposite ends, end cap means closing off said opposite ends of said cylinder, a piston and rod assembly mounted in said cylinder for longitudinal reciprocating movement therein, said piston and rod assembly including a piston and a piston rod affixed to said piston; said improvement comprising:
an elongated cam rod having a camming surface thereon;
mounting means connected to said cam rod for holding said cam rod against longitudinal movement within said cylinder and for permitting rotational movement of said cam rod;
at least one camming element carried by said piston and rod assembly, said camming element being in cooperative

engagement with said camming surface of said cam rod for causing rotation of said cam rod about its longitudinal axis to a plurality of rotational positions corresponding to the longitudinal position of said piston and rod assembly in response to reciprocating longitudinal movement of said piston and rod assembly relative to said cam rod;

rotary potentiometer means mounted within said cylinder and having a rotary wiper element adapted to rotate to a plurality of positions for providing a variable resistance;

mechanism drivingly interconnecting said cam rod to said wiper element for causing said wiper element to rotate to a plurality of positions in response to rotation of said cam rod;

said piston rod including an interior bore formed therein and extending along the longitudinal axis thereof, said cam rod having one end thereof extending into said bore for telescopic sliding movement therein;

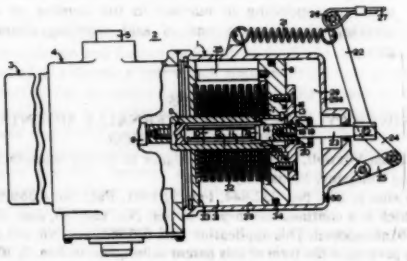
said rotary potentiometer means being positioned completely within said cylinder and being located completely externally of said interior bore of said piston rod.

4,552,056

MANUAL RELEASE AND AUTOMATIC RESET ARRANGEMENT FOR SPRING-APPLIED/AIR-RELEASED BRAKE

Albert A. McKay, Stoney Creek, Canada, assignor to WABCO Ltd., Hamilton, Canada

Filed Dec. 24, 1984, Ser. No. 686,051
Int. Cl.[4] F01B *9/00, 31/00*
U.S. Cl. 92—29 **12 Claims**



1. A spring-applied, fluid pressure released emergency/parking brake unit comprising:

(a) a cylinder;

(b) a piston operably disposed within said cylinder for axial movement therein;

(c) an actuating spring arranged in said cylinder to exert a force on said piston in a brake application direction;

(d) said cylinder including an end wall, said cylinder and said end wall cooperating with said piston to form a chamber pressurization of which exerts a counteracting force on said piston in a brake release direction;

(e) a push rod connected at one end to said piston, said push rod having a first stepped bore there through in which a first shoulder is formed;

(f) an actuating rod disposed in said first stepped bore having one end projecting from said push rod and the other end forming a flexible sleeve, said sleeve having an outturned lug engageable with said first shoulder, the engageable surfaces between said first shoulder and said lug having an angle of inclination with the axis of movement of said piston so as to exert an inwardly acting force on said flexible sleeve when said piston is actuated in said brake release direction;

(g) a cylindrical plug member carried by said piston and having a normal position in which at least one end thereof is disposed within said flexible sleeve to support said sleeve against deflection in response to said inwardly acting force exerted thereon, thereby maintaining said lug engageable with said first shoulder, whereby the force of said actuating spring is transmitted to said actuating rod via said first shoulder and said lug; and

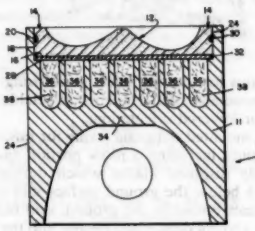
(h) manual release means connected to the other end of said plug member for axially displacing said lug member from said normal position to a release position without said flexible sleeve member to permit said deflection of said flexible sleeve member sufficiently to disengage said lug from said first shoulder and thereby interrupt said transmission of said spring force to said actuating rod.

4,552,057

THERMALLY INSULATED PISTON

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 30, 1983, Ser. No. 567,193
Int. Cl.[4] F04B *31/08*
U.S. Cl. 92—176 **15 Claims**



1. A piston comprising:

(a) a cap portion having an outer surface and an inner planar and a periphery surface extending from said inner surface to said outer surface, said periphery surface having a brazing alloy receiving groove therein,

(b) a body portion having a substantially circular periphery, said body portion having a recess for receiving said cap portion, said recess having a first surface opposing said inner planar surface of said cap portion, said body portion and said cap portion being joined together by a first brazing alloy positioned in said groove and by a second brazing alloy positioned between said inner planar surface of said cap and said first surface of said recess, said body portion having a cellular portion adjacent to said second brazing alloy comprised of open-ended cells filled with a thermal insulating material said cells being closed by said brazing alloy and said cap portion.

4,552,058

AIR FLOW CONTROL SYSTEM HAVING MINIMUM VARIATION IN VOLUME

James E. Wooldridge, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

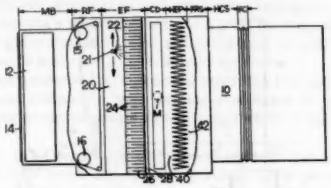
Filed Nov. 21, 1983, Ser. No. 553,797
Int. Cl.[4] B64D *13/00*
U.S. Cl. 98—1.5 **10 Claims**

1. In an air volume control ventilation system having a fan (11) for supplying air through ductwork and fixed-resistance filter means (RF,EF) including an electrostatic filter;

a variable resistance control damper (CD) in said system, said control damper including an actuator (M) adapted when energized in first and second directions, respectively, to operate said control damper in opening and in closing directions to increase and to decrease the volume of air flowing in said system, respectively, and thereby adjust the system differential pressure; and

means for monitoring the static pressure differential across said fan including a differential pressure switch (PDPS)

connected across said fan having high limit normally open contacts and an air volume increasing relay means (A1) having an operating coil in series with said high limit contacts and with a pair of normally open contacts (A) in parallel with said high limit contacts for completing a first circuit to actuate said control damper in said opening direction when said static pressure differential rises to a



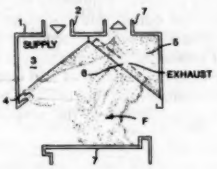
first predetermined limit, and means including a low limit normally open contact which closes only when said static pressure differential falls below a second predetermined limit for completing a second circuit to actuate said control damper in said closing direction to close said damper when said differential pressure decreases below said second predetermined limit.

4,552,059

FLOW MEASUREMENT FOR EXHAUST-TYPE CANOPY AND VENTILATING HOOD

Gary J. Potter, Marthasville, Mo., assignor to Cambridge Engineering, Inc., St. Louis, Mo.

Filed Sep. 18, 1984, Ser. No. 651,795
Int. Cl.⁴ F24C *15/20*
U.S. Cl. 98—115.1 **5 Claims**



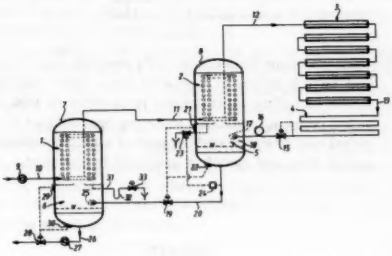
1. A ventilating hood for use in conjunction with a processing apparatus such as a cooker or the like and for attaining through a precalibration of the hood to achieve a most effective ventilation of the fumes and air generated in the region of such a cooker, comprising, a housing, a supply chamber and an exhaust chamber operatively associated with the housing, a supply inlet communicating with said supply chamber for conveying fresh air to the housing, an exhaust outlet also communicating with the exhaust chamber for removing the combined air and fumes passing through the housing and from the region of the cooker apparatus, pressure calibration means operatively associated with at least one of said supply chamber and exhaust chamber and when operative providing means for detecting the pressure drops within the housing and for a determination of the setting required for the capacity of supply or exhaust air flows required for a balanced operation of the ventilating hood, said calibration means including a manometer which when connected with one of said supply chamber and exhaust chamber providing for a reading of the pressure drop resulting from air passing through said chambers, said manometer incorporating a pair of pressure sensors for detecting air pressures at two discrete locations, one of said sensors being connected at one location within one of the supply chamber and exhaust chambers, and with the second of said sensors being installed at a remote location from the first mentioned sensor for sensing air pressure to determine pressure variations in the air flow with respect to one of said supply chamber and exhaust chamber.

4,552,060

APPARATUS FOR THE CONTINUOUS BOILING OF WORT

Simon Redl, Dr. George-Schranner-Str. 6, D-8309 Reichertshausen, and Alfons Wolfseder, Blumenstr. 13, D-8050 Freising, both of Fed. Rep. of Germany

PCT No. PCT/DE84/00026, § 371 Date Sep. 10, 1984, § 102(e) Date Sep. 10, 1984, PCT Pub. No. WO84/03101, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 1, 1984, Ser. No. 650,514
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303671
Int. Cl.⁴ C12C *13/04*
U.S. Cl. 99—278 **8 Claims**



1. Apparatus for the continuous boiling of wort, containing
(a) at least one recuperative heat exchanger for raising the temperature of the wort,
(b) at least one further heat exchanger for raising the temperature of the wort to a boiling temperature higher than 100° C.,
(c) a heat maintaining zone,
(d) at least one separator for depressurisation and lowering of the temperature of the wort and for separating off the vapour,
(e) the vapour being delivered to the recuperative heat exchanger as heating medium,
characterised in that
(f) the separator (6 or 5) and the recuperative heat exchanger (1 or 2 respectively) are combined into one structural unit (7 or 8 respectively).

4,552,061

TRASH COMPACTOR SYSTEM

James W. Brutsman, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

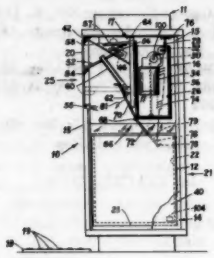
Filed Oct. 3, 1983, Ser. No. 538,704
Int. Cl.⁴ B30B *15/06*
U.S. Cl. 100—53 **7 Claims**

1. A waste disposal system for receiving and compacting trash deposited by a user comprising:
(a) a system frame having an upper and a lower portions and support means associated with the lower portion of said frame for supporting a waste container;
(b) a compactor unit having a ram means adjacent to the waste container, a guide chain attached at one end to said upper portion of said frame and at its opposite end to said lower portion of said frame, a sprocket engaging said chain rotatably mounted on said ram means, means for rotating said sprocket in either rotational direction, a chain follower mounted adjacent to said sprocket on said ram means, said follower brushing said chain on said sprocket so that upon rotation of said sprocket said ram means is moved in a compactor cycle towards and away

from said support means to compact waste in the waste container on said support;

(c) a waste deposit door located in said frame for permitting access to said container on said support;

(d) switch means activated by a user; and



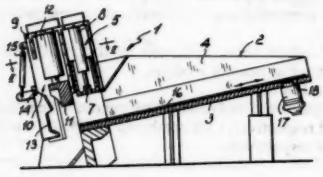
(e) control means for automatically opening said door when said switch means is activated by a user, said control means including timer means responsive to said switch means being activated for imitating operation of the compactor unit towards said support at a predetermined time period after said switch is activated by the user.

4,552,062

SCRAP METAL PRESS FOR PRODUCING COMPACTED SCRAP BLOCKS

Luciano Vezzani, Ovada, Italy, assignor to Officine Vezzani S.p.A., Milan, Italy

Filed Aug. 5, 1983, Ser. No. 520,671
Claims priority, application Italy, Sep. 27, 1982, 23450 A/82
Int. Cl.[4] B30B *9/32*
U.S. Cl. 100—95 **4 Claims**



1. A scrap metal press for producing compacted scrap blocks comprising:

an inclined feed box having a lowermost end portion and an uppermost opposite end portion and defining a scrap metal advance direction pointing from said uppersmost opposite and portion towards said lowermost end portion;

said inclined feed box having a fixed supporting bottom;

at least one compacting unit located at the lowermost portion of said feed box;

said compacting unit acting in a direction substantially transverse to the scrap metal advance direction;

a guillotine shears unit for separating the compacted scrap blocks; and

a plate resting on said bottom in slidable relationship therewith, means for at least temporarily reciprocating said plate at least in the scrap metal advance direction of said feeder box,

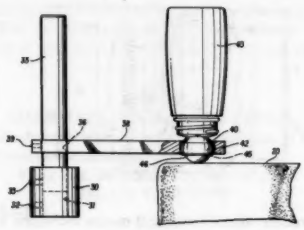
said means comprising a rotable off-center pin having a rotation axis perpendicular to said bottom and said plate and rotably engaging said plate.

4,552,063

LINE CODER SELF-INKING SYSTEM WITH DISPOSABLE INK SUPPLY RESERVOIR

James C. Bronson, P.O. Box 372, Lakeland, Fla. 33802

Filed Nov. 19, 1984, Ser. No. 673,055
Int. Cl.[4] B41F *17/26*
U.S. Cl. 101—35 **5 Claims**



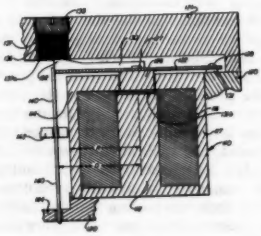
1. In combination with an a first arm carrying a rotatably mounted printing roller, said arm being mounted by support means adjacent to a conveyor which carries articles that engage the printing roller, and a rotatably mounted inking roller reservoir carried by said arm and in continuous engagement with said printing roller for continuously transferring ink thereto in response to rotation of said rollers caused by engagement of said printing roller with articles passing along said conveyor, the improvement comprising, means for continuously replenishing the supply of ink in said reservoir including post means mounted on said support means, a second arm mounted on said post means above said first arm and having a portion in fixed position spaced from said reservoir, an ink supply container removably mounted on said second arm and having a discharge outlet, said discharge outlet having wall structure carrying a ball which extends beyond said wall structure, said ball extending into engagement with the surface of said reservoir whereby rotation of said reservoir causes a feed of ink from the container to the reservoir by means of the ball, which feed is proportional to the rotation of said marking wheel.

4,552,064

DOT MATRIX PRINTERS AND PRINT HEADS THEREFOR

Royden C. Sanders, Jr., Burton Hwy., Wilton, N.H. 03086, and John L. Forsyth, Box 182, Newton Junction, N.H. 03851

Continuation-in-part of Ser. No. 436,950, Oct. 27, 1982, , and a continuation-in-part of Ser. No. 519,880, Aug. 2, 1983. This application Oct. 21, 1983, Ser. No. 544,397
Int. Cl.[4] B41J *3/12*
U.S. Cl. 101—93.05 **14 Claims**



1. A print head for use in a multihead printing array comprising:

a solenoid case including a sidewall and a pair of opposed

bases axially aligned on and connected with said sidwall, one of said bases having an aperture formed therein, said case being made of a magnetically permeable material,

a core of magnetically permeable material defining a solenoid axis and extending within said case from the non-apertured base to a point adjacent the apertured base, said core defining a pole surface exposed to the exterior of the case by way of said aperture,

a solenoid coil disposed in said case about said core,

a beam, having a mounting end and a print pin support end,

means rigidly mounting said mounting end of said beam relative to said case to overlie said aperture,

an armature mounted to said beam, extending into said aperture and defining a pole surface positioned to form a working magnetic gap with said pole surface of said core, and

a straight print pin rigidly attached to the print pin support end of said beam and extending substantially parallel to the axis of said solenoid, whereby movement of said beam and attached armature toward said solenoid moves said print pin substantially parallel to said axis for printing motion thereof, and

a damper disposed to damp recoil energy of said beam, armature and print pin,

said beam having a resilient portion disposed between said rigid mounting and said armature and being rigid from said armature to said print pin, and

said damper comprising a resilient damper plug provided with means for adjusting the position of the damper relative to the beam and with means between the damper plug and the adjusting means which permits the damper plug to rotate whereby said plug moves during operation to progressively change the location of impact thereon of said print pin beam assembly on recoil.

4,552,065

PRINTING IN REGISTER ON SHEETS

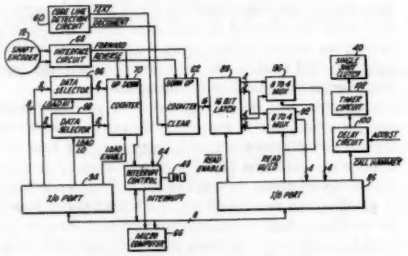
Donald G. Billington, Stoke on Trent; Reginald D. Brooker, Stonehouse; Harry Powell, Congleton; Roger Walker, Nantwich; David R. G. Wilkins, Wistaston, and Stuart Weaver, Whitchurch, all of England, assignors to McCorquodale Machine Systems Limited, London, England

Continuation of Ser. No. 408,435, Aug. 16, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 650,989

Claims priority, application United Kingdom, Aug. 17, 1981, 8125048; Mar. 3, 1982, 8206220

Int. Cl.[4] B41J *1/48, 13/26*

U.S. Cl. 101—93.33 **6 Claims**



1. Apparatus for printing a line of characters in a desired print line location on each of a series of sheets so that the resulting printed line of each sheet is registered with respect to a feature of the sheet, comprising:

means defining a flow path for the sheets;

a printing station located at a predetermined point along the flow path and comprising impact printing means including individually rotatably adjustable print wheels mounted on a common shaft, the axis of which is transverse and fixed with respect to said flow path, each print wheel having a plurality of character faces spaced around its periphery and individually selectable by rotation of each wheel about the said axis to predetermined print positions, the said axis extending in a direction parallel to the required line of characters on the sheet passing through the apparatus, and a hammer to cause impact printing of a sheet against a type face whereby the print wheels together print a line of characters, one for each wheel, in a single operation, each character printed being determined by the respective rotated position of the corresponding print wheel;

means for locking the print wheels in the positions to which they have been rotated;

sheet feeding means for feeding a succession of sheets the spacing between which may vary, continuously and at a substantially constant speed along the flow path and through the printing station,

sensing means detecting the arrival of the said feature of the sheet at a given point along the flow path and providing a corresponding electric signal; and

printing control means responsive to said signal from said sensing means and to the speed of travel of the sheet to initiate printing hammer firing when the desired print line location on the sheet reaches the printing station, whereby regardless of the speed of travel of, intervals between the individual sheets, or time of arrival of the sheets at the printing station, printing of a line of characters is effected by the stationary print wheels in register with respect to the said feature of the sheet without substantially changing the speed of the sheets.

4,552,066

COMBINED SHEET FED ROTARY PRINTING MACHINE FOR SECURITIES, IN PARTICULAR BANK-NOTES

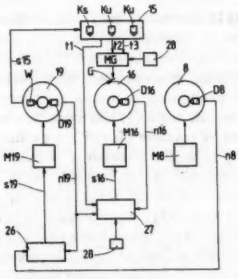
Gualtiero Giori, Lonay, Switzerland, and Albrecht J. Germann, Würzburg, Fed. Rep. of Germany, assignors to De La Rue Giori S.A., Switzerland

Filed Nov. 28, 1984, Ser. No. 675,848

Claims priority, application European Pat. Off., Jul. 24, 1984, 84810368.5

Int. Cl.[4] B41F *9/02, 13/24*

U.S. Cl. 101—152 **9 Claims**



1. Combined sheet fed rotary printing machine for securities, in particular bank-notes, comprising a first printing unit, a second printing unit formed by an intaglio printing unit, and a conveying device connecting the two printing units for transferring the sheets, said printing units each have an independent drive mechanism without a continuous longitudinal shaft, the drive mechanism of the second printing unit being controlled in dependence upon the speed of the first printing unit, a detector system mounted in the conveying zone and being equipped with measuring heads which respond to register marks applied to the sheets in the first printing unit and detect register devia-

tions in the circumferential direction and in the lateral direction, and a register correcting device, located between the detector system and the second printing unit, said device comprises a register drum and is arranged to correct the position of the sheets in dependence upon the measured register deviations.

4,552,067

ROTARY PRINTING MACHINE WITH OFFSET BEARING AND DRIVE FOR AN EXCHANGE CYLINDER

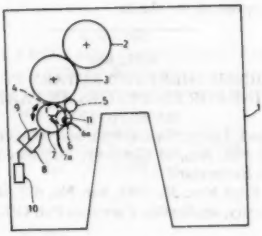
Franz X. Gollinger, Wertingen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,283

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407428

Int. Cl.⁴ B41F *13/20, 13/44*

U.S. Cl. 101—216 **10 Claims**



1. Rotary printing machine having a pair of spaced side walls **(1)**;

opening **(11)** formed in said side walls at predetermined locations to receive bearings for a plurality of printing machine rollers and cylinders **(2, 3, 4, 5, 6)**

and comprising, in accordance with the invention

means for positioning a driven exchange cylinder **(7)** between the side walls **(1)** and a position in which a replacement axis of rotation *(7a)* of the exchange cylinder **(7)** is offset (x) from the position of a bearing axis *(6a)* of an existing opening **(11)** in said side walls including

journal means **(12,13, 14)** fitted in said opening **(11)**;

an auxiliary shaft **(15)** rotatably secured in the journal means rotatable about the bearing axis *(6a)* and extending beyond the side walls at least inwardly between the side walls;

a spur gear **(16, 17)** secured to the auxiliary shaft laterally of at least one of the side walls **(1)**;

an inner, inwardly geared gear ring **(22)** meshing with the spur gear **(16)** located inwardly between the side walls,

said ring gear **(22)** being positioned with its center of rotation on said replacement axis *(7a)* and hence offset and eccentric with respect to the bearing axis *(6a)*;

a shaft **(23)** connected between the ring gear **(22)** and said replacement cylinder **(7)** concentric with said replacement axis *(7a)*; and

a bearing **(24, 27)** journalling said inner ring gear **(22)** and locating said inner ring gear in position on the side wall **(1)**.

4,552,068

GRAVURE CYLINDER

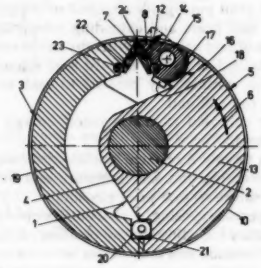
Joachim Bernauer; Joachim Dorow, both of Frankenthal, and Primin Göbel, Lambsheim, all of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Dec. 27, 1983, Ser. No. 565,344

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300678

Int. Cl.⁴ B41F *27/12*

U.S. Cl. 101—415.1 **9 Claims**



1. A gravure cylinder for a gravure printing press, said gravure cylinder having an axial shaft and being capable of accepting an intaglio wrap-on plate having an imprecise length with inwardly turned folds at the circumferential edges thereof, said gravure cylinder comprising:

(a) a first casing means in the form of a segment of said cylinder fixed in relation to the axial shaft of said cylinder and having a beaked rim structure,

(b) a second casing means which together with said first casing means forms a body with an outer cylindrical face corresponding to said cylinder, said second casing means being a plate tensioner forming generally one half of said cylinder supported on said axial shaft for pivoting movement thereabout in relation to said first casing means,

(c) an edge rail with a beaked rim structure pivotally mounted to said plate tensioner about an axis spaced radially from and parallel to said axial shaft, said edge rail having an outer surface being co-cylindrical with said cylinder, said beaked rim structure opposing the beaked rim structure of said first casing means,

(d) means mounted on said cylinder for pivotally moving said plate tensioner to reposition the beaked rim structure thereof circumferentially with respect to the beaked rim structure of said first casing means to thereby accommodate wrap-on plates on said cylinder of imprecise lengths,

(e) a gripping rail associated with each beaked rim structure for gripping each associated fold of said intaglio plate, each said gripping rail being pivotably mounted so as to grip the associated fold of said plate between said beaked rim structure and said gripping rail, each gripping rail including a groove along the length thereof, said grooves being in complementary aligned relationship to one another, and

(f) a resilient sealing strip disposed within the complementary grooves of said gripping rails, said sealing strip and said gripping rails defining a cavity therebetween in which a filling material is inserted to seal the surface of said cylinder.

4,552,069

SMEAR-FREE TRANSFER CYLINDER FOR SHEET-FED ROTARY PRINTING MACHINES

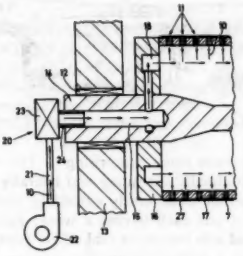
Hans-Georg Jahn, Wiesenbach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,846

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328451

Int. Cl.[4] B41F *13/08*

U.S. Cl. 101—420 11 Claims



1. Smear-free transfer cylinder for sheet-fed rotary printing machines have a cylindrical casing formed with blow holes distributed over the entire sheet-carrying peripheral surface of the cylinder, comprising air distribution elements respectively disposed in the blow holes for influencing blowing air flow out of the blow holes for forming a uniform air cushion, said air distribution elements being formed of air-permeable, elastic and slightly compressible material having a low specific gravity.

4,552,070

INSULATING LAYER FOR SOLID FUEL ROCKET ENGINES

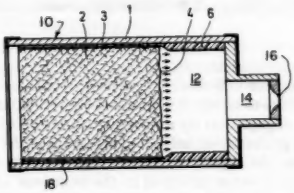
Heinz G. Langer, Gauting, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,514

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133787

Int. Cl.[4] F42B *15/00*

U.S. Cl. 102—290 4 Claims



1. A solid fuel rocket engine, comprising a casing defining a combustion chamber, a solid propellant charge in said combustion chamber and a heat-responsive, expandable insulating layer consisting essentially of fibers and a hydrated alkali silicate which is free of polymer binder, which insulating layer effects an evaporating foam between said casing and said charge.

4,552,071

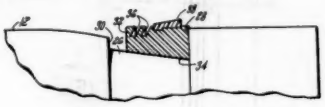
TWO-PIECE DESPIN OBTURATOR

Brian J. Horais, Huntington, Conn., and Joseph S. Kocur, Rockaway, N.J., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1982, Ser. No. 388,551

Int. Cl.[4] F42B *31/00*

U.S. Cl. 102—527 5 Claims



1. A two-piece despin obturator for use on a projectile which is to be discharged from a gun barrel, said gun barrel including conventional spiraled rifling, comprising:

a ring means fabricated from a rigid material, including both an outer surface that has a raised area positioned with respect to said gun barrel to act as a high pressure seal and also an inner surface whose diameter is sized to slidably mate with a forwardly inclined surface located on the sidewall of said projectile;

wiper means positioned on said outer surface of said ring means rearwardly of said raised area, said wiper means being formed from a pliable material which engraves into the rifling of said gun barrel forming a low pressure seal; and

whereby said wiper means engraves into said rifling in said gun barrel during the ramming process for holding said projectile in place before firing, and when said projectile is fired, said raised area of said ring means acts as a high pressure seal, and at the same time said inner surface frictionally engages said forwardly inclined surface of said projectile sidewall thereby imparting some rotational velocity to said projectile.

4,552,072

INSTALLATION FOR DESTINATION ADJUSTMENT OF DESTINATION IDENTIFICATION MARKS FOR RECEPTACLES

Hans-Joachim Kardinal; Herbert Lehmann, and Klaus-Peter Dziggel, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,555

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3022130

Int. Cl.[4] B61J *3/00*

U.S. Cl. 104—88 15 Claims

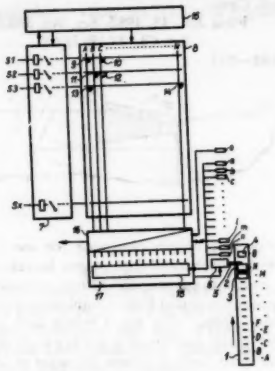
10. A code-setting system for a conveyor wherein a destination or function code is applied to a traveling unit of the conveyor upon movement of the traveling unit past a code-setting station, said system comprising:

at least one coded member shiftable in the direction of travel of said unit and provided on a side thereof facing said station, said at least one coded member being selectively positionable in one of a number of preselected positions along said unit;

a retractable code-setting member at said station aligned with said at least one coded member in said direction in an extended position whereby said code-setting member can engage said at least one coded member to dispose the same at a preselected position on said unit whereby said unit moves past the code-setting member while said code-setting member is extended to selectively position said at least one coded member;

position detecting means at said station and on said unit for signaling each of a plurality of relative positions between said unit and said station as said unit passes said station; and

means responsive to said position detecting means for actuating said code setting member to retract the code setting member upon positioning of said at least one coded member in said



one preselected position along said unit corresponding to the respective detected relative positions of said unit to said station.

4,552,073

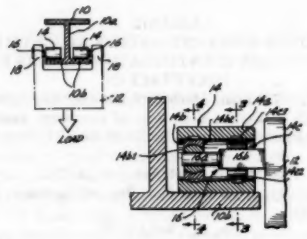
SUSPENDED LOAD TRANSPORT APPARATUS

Glenn S. Smith, Issaquah, Wash., assignor to Beebe International, Inc., Seattle, Wash.

Filed Feb. 23, 1984, Ser. No. 582,965

Int. Cl.[4] B61B *3/00*

U.S. Cl. 105—154 **10 Claims**



1. A monorail crane carriage adapted to run on the lower web-supported flanges of a generally horizontal H-beam, said carriage including a frame supported by and supporting load-bearing rollers mounted respectively on coaligned opposing support shafts which are frame-cantilevered to project inboard transversely in relation to the beam web, said rollers each comprising annular tread means with relatively inboard and outboard portions having cylindrical tread surfaces in running engagement with an H-beam lower flange, and separate anti-friction bearing means for each roller rotatively supporting the respective inboard and outboard portions of said tread means on a shaft, one such separate bearing means comprising resiliently carriage load-compressed support means interposed between the associated tread means portion and the shaft permitting rocking of such tread means portion accompanied by translational yielding thereof in relation to the shaft for maintaining running contact with the flange of the tread surface of such portion over its full length as flange deflection changes with varying carriage load.

4,552,074

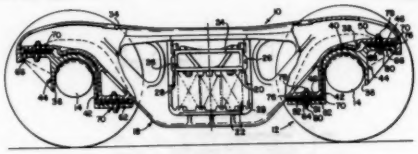
PRIMARY SUSPENSION FOR RAILROAD CAR TRUCK

Harry W. Mulcahy, Griffith, Ind.; Dimitris Garivaltis, Chicago, Ill.; Stanley Karbowniczek, Chicago, Ill., and Horst T. Kaufhold, Chicago, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 21, 1983, Ser. No. 553,824

Int. Cl.[4] B61F *5/26*

U.S. Cl. 105—224.1 **4 Claims**



1. A railway vehicle truck comprising

a pair of longitudinally extending and laterally spaced side frames, a pair of transversely extending and lengthwise spaced wheel sets each having a wheel axle, means for mounting said side frames on said wheel axles so that said truck assumes a normal rectangular position, said mounting means including a pair of elastomeric pads stressed in shear and disposed between said side frames and said axles on opposite sides of each of said respective axles for applying opposing forces on said respective axles to yieldingly resist yaw, longitudinal and lateral movements of axle relative to said side frame thereof while permitting turning of said axles relative to said side frames when said truck traverses curved tracks, one of said pads prestressed lengthwise in one direction and the other of said pads prestressed lengthwise in the opposite direction to create equal and opposite shear forces acting on said axle when said truck assumes a normal rectangular position.

4,552,075

SECURE CONTAINER, FOR EXAMPLE FOR BANKNOTES

Peter Glasson, Portsmouth, and John Wood, Hampshire, both of England, assignors to De La Rue Systems Limited, London, England

Filed Jun. 2, 1983, Ser. No. 500,437

Claims priority, application United Kingdom, Jun. 4, 1982, 8216326

Int. Cl.[4] E05B *65/46*

U.S. Cl. 109—52 **4 Claims**

1. A secure container including a casing having an aperture, a closure device and closure-operating means for moving the closure device to cover or uncover the aperture, and actuating means for engagement by a releasing member forming part of a dispensing, loading or unloading apparatus as the container is inserted into the apparatus, the container further comprising;

a locking member mounted in the container and movable between a withdrawn position in which it lies entirely within the casing of the container and a locking position in which a part of the locking member projects through an opening in the casing of the container and prevents withdrawal of the container from the apparatus;

spring means urging the locking member towards one of its said positions;

means controlled by the actuating means for moving the

locking member against the spring means to the other of its said positions;

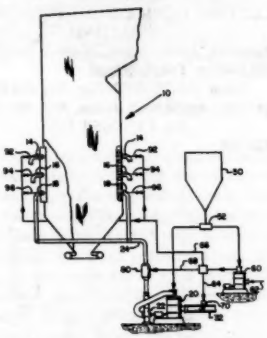
and a lost-motion connection means coupling the actuating means to the closure-operating means for moving, the locking member to its locking position before the closure device is moved by the actuating means, through the closure-operating means, to its uncovering position, and on removal of the container from the apparatus for moving the locking member to its unlocking position after the closure-device has been restored to its covering position.

4,552,076

COAL FIRED FURNACE LIGHT-OFF AND STABILIZATION USING MICROFINE PULVERIZED COAL

Michael S. McCartney, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 19, 1984, Ser. No. 673,051
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—347 **2 Claims**



1. A method for the cold start of a pulverized coal-fired furnace system of the type having furnace, a load-carrying burner arranged to direct a stream of pulverized coal and air into the furnace, a load-carrying coal drying and pulverizing mill for providing dried pulverized coal, and conduit means interconnecting the load-carrying mill to the load-carrying burner for conducting the stream of pulverized coal and air from the load-carrying pulverizer to the load-carrying burner, said method comprising:

a. providing a supply of microfine pulverized coal having a mean particle size less than about 10 microns;

b. combusting a first portion of said supply of microfine pulverized coal to generate a supply of hot gas;

c. passing the supply of hot gas generated by the combustion of the first portion of said supply of microfine pulverized coal to the load-carrying mill;

d. supplying raw, coal to be pulverized to the load-carrying mill;

e. pulverizing and drying the raw coal supplied to the load-carrying mill and entraining the resultant pulverized coal therein in the hot gas;

f. conveying the pulverized coal and hot gas from the load-carrying mill through the conduit means to the loading-carrying burners; and

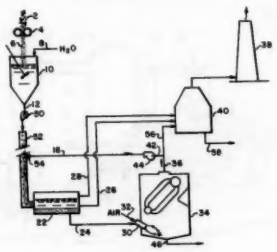
g. igniting the stream of pulverized coal and gas being directed from the load-carrying burner into the furnace thereby establishing a flame within the furnace by combusting a second portion of said supply of microfine pulverized coal in an igniter burner operatively associated with the load-carrying burner so as to cause the subsequent ignition of the stream pulverized coal and gas being directed from the load-carrying burner into the furnace.

4,552,077

INTEGRATED COAL CLEANING PROCESS

Donald C. Borio, New Britain; Richard W. Borio, Somers; Gilbert L. Hale, Granby, all of Conn.; Arun K. Mehta, Los Altos, Calif., and Arnold L. Tyler, Torrington, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 27, 1984, Ser. No. 625,271
Int. Cl.[4] F23G *5/04*
U.S. Cl. 110—347 **2 Claims**



1. A process for beneficiating a sulfur-bearing coal, comprising the steps of:

comminuting said coal and combining the comminuted coal with water to form a neutral liquid-solid slurry;

pumping the neutral slurry into a conduit for transporting the comminuted coal from a first location to a second location;

injecting an SO_2-bearing gas into the conduit upstream of the second location to form an acidic liquid-solid slurry, said acidic slurry having a pH of 5 or less;

separating, upon arrival at the second location, the liquid portion of said acidic slurry containing any alkali metals dissolved from the comminuted coal from the solid portion of said acidic slurry containing the now-beneficiated coal;

combusting the beneficiated coal in air, oxidizing the sulfur present therein, thereby generating an SO_2-bearing gas; and

using a portion of the SO_2-bearing gas generated by the combustion step for the step of injecting an SO_2-bearing gas into the conduit.

4,552,078

PROCESS AND INSTALLATION FOR RECYCLING SOLID UNBURNT MATERIALS IN A FLUIDIZED BED

Jean-Xavier Morin, Le Creusot, and Gérard Chrysostome, Montchanin, both of France, assignors to Creusot-Loire, Paris, France

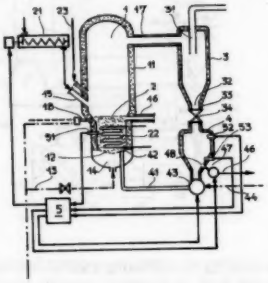
Filed Dec. 1, 1983, Ser. No. 556,870
Claims priority, application France, Dec. 8, 1982, 82 20546
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—347 **7 Claims**

1. Process for supplying with combustible material a fluidized bed combustion installation comprising a vessel (1) having therein a fluidized bed for the combustion of a combustible material producing smoke, conduit means (17) for evacuating said smoke carrying along solid particles containing unburned matter, a device (3) for separating out said solid particles carried along by said smoke, and a circuit (41) for recycling to said fluidized bed said solid particles recovered in said separating device, said process comprising two alternating phases for supplying said fluidized bed with combustible material, viz.,

(1) a first phase of normal operation in which said fluidized bed is supplied with combustible material at an adjustable flow rate by supply means (21) so as to produce a predetermined temperature in said fluidized bed, and during which said solid particles recovered in said separating

device (3) are accumulated in a reverse silo (4), said recycling circuit being closed, and

(2) a second periodic recycling phase during which supply from said supply means (21) is halted and said recycling circuit (41) is opened, in order to recycle to said fluidized bed said solid particles accumulated in said reserve silo (4) during said first phase, recycling being so regulated that the combustion of said unburnt matter contained in said solid particles maintains the temperature of said fluidized bed at a desired level, said recycling circuit (41) being



closed as soon as said temperature can no longer be maintained at said level, the accumulated particles being removed during a period sufficiently small not to cause a drop in temperature of said fluidized bed below a predetermined limit, whereupon normal first phase operation resumes;

(3) an exothermic reaction being maintained alternatively by combustion of said combustible material in said first phase and by combustion of said unburnt matter in said second phase.

4,552,079

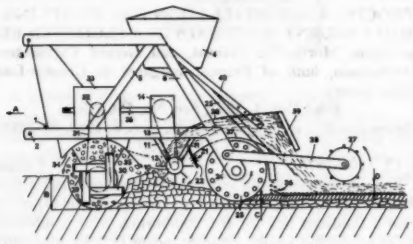
MACHINE FOR PLANTING SEEDS

Anton Werner, Saverne, France, assignor to Kuhn S.A., Saverne, France

Continuation of Ser. No. 410,863, Aug. 23, 1982, abandoned, which is a continuation-in-part of Ser. No. 125,217, Feb. 27, 1980, abandoned. This application Dec. 15, 1983, Ser. No. 562,028

Int. Cl.[4] A01C *5/00*

U.S. Cl. 111—85 **8 Claims**



1. A machine movable in a forward direction over a ground, and operable for planting seeds into the ground,

comprising in combination

break-up means positioned forwardly for breaking up the ground,

soil conveyance means including a soil lifting device disposed rearwardly of said break-up means operative for moving and lifting a top layer of soil off the thus broken ground, so that a lower layer of the ground is uncovered, said soil lifting device comprises a plurality of tools, rotatable about an axis transverse to said forward direction,

tamping means located rearwardly of said soil lifting device and including a tamping roller rotatable about an axis transverse to said forward direction, said tamping roller being adapted for providing a tamping of the uncovered lower layer free of any of the top layer immediately previously removed from the soil by said soil conveyance means,

seed emplacement means for placing seeds on the tamped lower layer;

said soil conveyance means conveying the lifted soil upwardly and so as to deposit it on the ground to the rear of said seed emplacement means, and

compacting means rearwardly of said tamping means, for compacting the deposited covering layer, whereby the lifted soil is deposited in the form of a loose-consistency covering layer onto the tamped layer, and onto the seed placed on the tamped surface.

4,552,080

CLOTH CUTTING DEVICE IN BUTTON-HOLE SEWING MACHINE

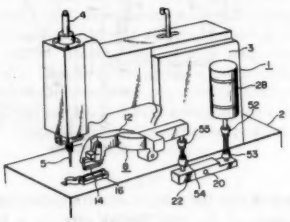
Hiroshi Miyazaki, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,893

Claims priority, application Japan, Apr. 30, 1982, 57-72937

Int. Cl.[4] D05B *3/06*

U.S. Cl. 112—68 **6 Claims**



1. A cloth cutting device for a button-hole sewing machine comprising:

a stationary knife which is fixedly secured at a position where a piece of cloth is to be placed;

a moveable knife for cooperating with said stationary knife to cut said piece of cloth;

a mechanical linkage for moving said moveable knife in a cloth cutting direction; and

an air drive unit for imparting a driving force to said linkage, said air drive unit including:

an air cylinder for driving said linkage;

control means for controlling the supply of air to said air cylinder;

an air supply pipe and an air exhaust pipe connected between said air cylinder and said control means; a pressure controller for controlling the pressure of air supplied to said control means; a first speed controller provided in said air supply pipe for adjusting the air supply speed and a second speed controller provided in said air exhaust pipe for adjusting the air exhaust speed.

2. A cloth cutting device for a button-hole sewing machine comprising:

a stationary knife fixedly secured to said machine at a position where a piece of cloth is to be placed;

a moveable knife moveably mounted on said machine for cooperation with said stationary knife to cut said piece of cloth, a mechanical linkage for moving said moveable knife in a cloth cutting direction and an air drive unit for imparting a moveable knife driving force to said linkage; said air drive unit comprising an air cylinder for driving

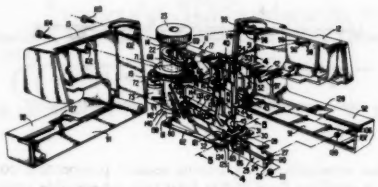
said linkage, control means for controlling the supply of air to said cylinder, an air supply pipe and an air exhaust pipe connecting said control means with said air cylinder and speed control means for adjusting the rate of supplying air to said air cylinder to control the operating speed of the moveable knife.

4,552,081

SKELETAL FRAME SEWING MACHINE

Artin G. Vartoukian, Roselle Park, N.J., and Gregoire G. Moussaian, Freneuse, France, assignors to The Singer Company, Stamford, Conn.

Filed Jun. 3, 1985, Ser. No. 740,167
Int. Cl.[4] D05B *73/04*
U.S. Cl. 112—258 **6 Claims**



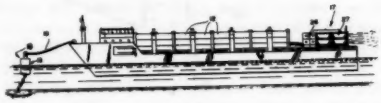
1. A sewing machine comprising a skeletal frame formed of an integral sheet metal stamping, said skeletal frame including two vertical substantially planar segments laterally spaced by a horizontal segment offset between said vertical segments, said vertical segments each being formed with a laterally offset flange spaced from said horizontal segment; a main shaft journalled in aligned bearing apertures formed in said horizontal segment and in each of said offset flanges; a sewing head module including a work presser, a needle carrying bar, a needle thread take-up, and a needle thread tensioning device; means for supporting said sewing head module on one of said planar vertical skeletal frame segments; an upwardly open U-shaped shaped shuttle race formed integrally on the other of said substantially planar vertical segments of said skeletal frame; a shuttle carrier reciprocable in said shuttle race; a work engaging feed dog; means locating and supporting said feed dog on said skeletal frame spanning said shuttle race; rotary actuators on said mainshaft; and means carried on said skeletal frame and responsive to said rotary actuators for actuating said needle carrying bar, said take-up, said shuttle carrier and said work feed dog in the formation of lock stitches.

4,552,082

OFFSHORE INCINERATION OF HAZARDOUS WASTE MATERIALS

Vincent G. Grey, R.D. 2, Box 763A, Sussex, N.J. 07461

Continuation-in-part of Ser. No. 382,769, May 27, 1982, abandoned. This application May 7, 1984, Ser. No. 607,606
Int. Cl.[4] B63B *35/28*
U.S. Cl. 114—26 **30 Claims**



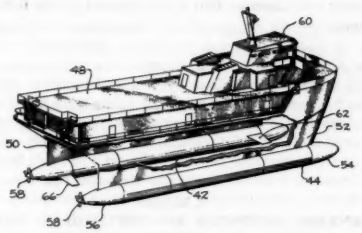
1. A method for disposing of hazardous waste material, comprising transporting said waste material to an offshore burnsite location, incinerating said waste material in an incinerator disposed at an elevation above water level at said burnsite location, and directing the effluent discharge from said incinerator in a generally horizontal stream towards the water to substantially avoid the stream being carried aloft.

4,552,083

HIGH-SPEED SEMISUBMERGED SHIP MANEUVERING SYSTEM

Terrence W. Schmidt, Cupertino, Calif., assignor to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Nov. 28, 1983, Ser. No. 555,828
Int. Cl.[4] B63B *1/12*
U.S. Cl. 114—61 **4 Claims**



1. A maneuverable small waterplane-area twin hull watercraft, comprising:

a pair of essentially tubular-shaped parallel hulls, each of said hulls including a rounded bow and a tapered stern,

a vertical strut mounted to each of said hulls for supporting an upper hull, said parallel hulls extending beyond said vertical struts,

an upper hull rigidly attached to the said vertical struts,

a propulsion means mounted on the stern of each of said parallel hulls,

and foil means mounted on the rearward portion inboard on each of said parallel hulls below the centerline of each of said parallel hulls within the length of the said strut,

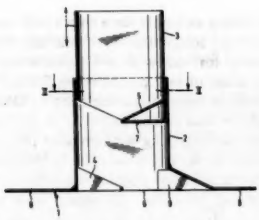
said foil means being differentially moveable for maneuvering the said watercraft, and wherein said foils are angled downwardly from said parallel hulls at an angle in the range of greater than 0 degrees to 45 degrees.

4,552,084

SUCTION DREDGER

Jukka Laiterä , Turku, Finland, assignor to Oy Wärtsilä Ab, Helsinki, Finland

Filed Feb. 13, 1984, Ser. No. 579,484
Claims priority, application Finland, Feb. 28, 1983, 830656
Int. Cl.[4] B63B *25/08*
U.S. Cl. 114—74 R **11 Claims**



1. A watercraft for receiving water and solid material produced in a suction dredging operation, the watercraft having a bottom which bounds an interior space of the watercraft, and comprising a generally vertical overflow tube connected to the bottom of the watercraft and defining a passageway for permit-

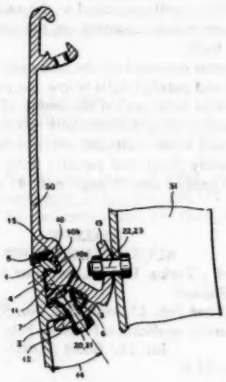
ting water to flow from said interior space downwardly out of the watercraft, said overflow tube comprising an outer tube member which has a lower end and an upper end and defines an opening and is secured rigidly at its lower end to the bottom of the watercraft, a first closure member secured to said outer tube member at the lower end thereof and partially blocking the opening defined thereby, an inner tube member which has a lower end and an upper end and defines an opening and is fitted inside the outer tube member and is movable vertically therein between a lower position and an upper position, and a second closure member secured to said inner tube member at the lower end thereof and blocking a part of the opening defined thereby that corresponds to the part of the opening of the outer tube member that is not blocked by the first closure member.

4,552,085

PLANKING ASSEMBLY AND METHOD OF MAKING SAME

Theodor Eder, Perchtolsdorf, and Jaroslav Koser, Ranshofen, both of Austria, assignors to Theodor Eder and Austria Metall Aktiengesellschaft, both of Vienna, Austria

Filed Jan. 24, 1984, Ser. No. 573,362
Claims priority, application Austria, Jan. 24, 1983, 218/83
Int. Cl.[4] B63B *3/00*
U.S. Cl. 114—84 **12 Claims**



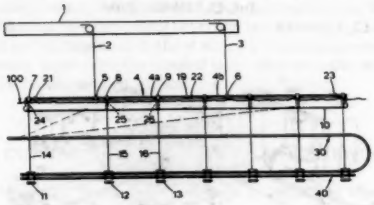
1. A planking assembly for a ship's hull, comprising a pair of doubly curved longitudinally extending planks, one of said planks being formed with a longitudinally extending outer hook, the other of said planks being formed with a longitudinally extending inner hook engaging in said outer hook over the lengths of said planks and only in line contact therewith, said hooks interengaging with angular play about a pivot axis of said inner hook, and means for holding said hooks against one another in said line contact whereby a traction-type junction is formed between said planks over the entire lengths thereof, said planks being of uniform cross section over their entire lengths, each plank being formed with an arcuate flange of circular curvature centered on said axis spaced from each hook, said flanges being juxtaposed with one another, said assembly further comprising bolt means in line with said hooks interconnecting said flanges and drawing same together to hold said hooks in line engagement with one another.

4,552,086

FLOAT ARRANGEMENT

Jan Böe, Bölandet; Tor-Arvid Haugland, Rykkin; Ole-Kristian Selvaer, Selvaer, and Atle Kleiven, Myking, all of Norway, assignors to Geophysical Company of Norway A/S, Hovik, Norway

PCT No. PCT/NO82/00048, § 371 Date May 10, 1983, § 102(e) Date May 10, 1983, PCT Pub. No. WO83/01046, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 3, 1982, Ser. No. 498,195
Claims priority, application Norway, Sep. 28, 1981, 813291
Int. Cl.[4] B63B *21/16*
U.S. Cl. 114—242 **8 Claims**



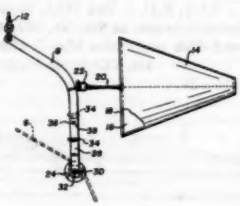
1. Float arrangement for marine seismic prospection comprising an elongate float and at least two submersible seismic sources carried thereby, said float and said seismic sources being adapted to be launched into water and lifted therefrom, respectively, as a unit by means of a hoist above the water surface, and said float being adapted to be towed on the water surface with said seismic sources suspended from the float by a respective suspension wire, further comprising at least two hoisting drums on the float and each with an associated hoisting wire from the hoist, a suspension drum on the float for each suspension wire, said hoisting drums and said suspension drums being rotationally coupled to each other and said wires being arranged in such a way on the drums that the suspension wires are reeled in when the hoisting wires are reeled off from the hoisting drums and vice versa, said seismic sources being adapted to constitute stop members for cooperation with the bottom of the float to arrest the suspension wires against continued reeling when the float is hauled in by means of the hoist, and stop means being provided for stopping said seismic sources when reeled out, at a predetermined distance below the float.

4,552,087

ANCHOR LIFTING DEVICE

Dale G. Van Oene, 305 - 165 W. 6th St., North Vancouver, British Columbia, Canada V7M 1K4

Filed Jan. 24, 1984, Ser. No. 573,484
Int. Cl.[4] B63B *21/24*
U.S. Cl. 114—297 **7 Claims**



1. Apparatus to allow hauling of a boat anchor attached to an anchor line the apparatus comprising;

a first, elongate limb of general L-shape having an arcuate middle portion;

a sea anchor attached to the first limb generally adjacent said arcuate middle portion;

a float attached to the first limb at one end;

first and second branches formed on the first limb at the other end;

means attached to said anchor line to maintain the anchor in a raised position;

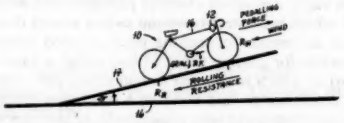
a support for the anchor line located between the first and second branches to form a recess to maintain the anchor line, one of the first and second branches adapted to move relative to the other to allow opening of the recess for introduction of the anchor line and means to retain the recess closed whereby with release of the anchor from the bottom moving the boat away from the anchor acts to haul in the anchor line as the elongate limb tends to remain in one place under the influence of the sea anchor.

4,552,088

VEHICLE GEARSHIFT INDICATOR

Thomas R. Morrison, 137 Overlook St., Mount Vernon, N.Y. 10552

Filed Sep. 23, 1981, Ser. No. 304,923
Int. Cl.[4] G01C *9/12*
U.S. Cl. 116—28.1 **2 Claims**



PEDALLING FORCE $P_K = R_R + R_W + R_G$
(FOR CONSTANT CADENCE)

R_R = ROLLING RESISTANCE f (WEIGHT)
R_W = WIND RESISTANCE G (SPEED, WIND)
R_G = W.L. TAN θ WHERE L = DISTANCE PER UNIT TIME
W = WEIGHT

1. An indicator for indicating an appropriate gear to be used by a rider of a bicycle having at least first and second gears, said bicycle being disposed on a surface having a slope, and said indicator comprising:

a bob weight;

a sector gear on said bob weight;

a pinion engaged with said sector gear;

a pointer;

a scale adjacent said pointer;

means for affixing said pointer to said pinion, said bob weight being effective to displace said pointer to a first position related to said slope; and

first and second means on said scale for indicating which of said at least first and second gears is appropriate for said slope; and

wherein said first indicating means includes a first set of gear indicators for indicating which of said at least first and second gears is appropriate for said rider to use under a first set of operating conditions, said first set of operating conditions including at least one of a first wind condition, a first desired cadence, and a first desired amount of force to be exerted during each stroke by said rider; and

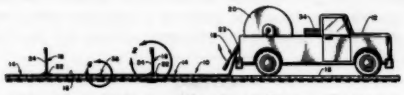
wherein said second indicating means includes a second set of gear indicators for indicating which of said at least first and second gears is appropriate for said rider to use under a second set of operating conditions, said second set of operating conditions including at least one of a second wind condition, a second desired cadence, and a second desired amount of force to be exerted during each stroke by said rider; whereby said rider is guided by said scale and pointer to select the one of said at least first and second gears which is appropriate both for said slope and for the one of said first and second set of operating conditions under which said bicycle is being used.

4,552,089

ROAD WARNING EMERGENCY SYSTEM AND METHOD OF UTILIZING SAME

Thomas P. Mahoney, 5 Collins Isle, Balboa Island, Calif. 92662

Filed Oct. 14, 1983, Ser. No. 541,875
Int. Cl.[4] G08B *5/00*
U.S. Cl. 116—63 P **8 Claims**



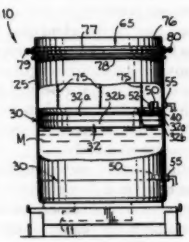
1. A reusable road hazard warning system for indicating the existence of hazardous conditions along a roadway or other surface, comprising: an elongated flexible carrier which, when not in use, is stored in a storage mode from which it can be payed out into a utilization mode on said roadway, said carrier conforming to said roadway configuration and irregularities and being disposable in coplanarity with said roadway and unattached thereto; a plurality of road warning elements normally maintained retracted when said carrier is disposed in its storage mode, said road warning elements being attached to said carrier and disposed in contiguity to said carrier in said storage mode, but being erectable therefrom when said carrier is payed out upon said roadway surface into its utilization mode; and an erecting means interposed between said carrier and said road warning elements to cause the automatic erection of said road warning elements as said carrier is payed out on said roadway surface.

4,552,090

BULK MATERIAL CONTAINER WITH A RIGID FOLLOWER

Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Filed Feb. 29, 1984, Ser. No. 584,744
Int. Cl.[4] B65D *88/42;* G01F *23/74*
U.S. Cl. 116—204 **10 Claims**



1. A container for bulk material comprising:

(a) a shell for storing bulk material, said shell being formed with a vertical inner surface;

(b) a rigid, floatable follower disposed in said shell in constant contact with the upper surface of the bulk material stored in said shell, said follower comprising rigid members in axial alignment and a disk-shaped yieldable member secured between said rigid members for engaging continuously the inner surface of said shell; and

(c) means on said shell disposed below said follower for removing bulk material from said shell, said yieldable member being a wiper for wiping the inner surface of said shell as bulk material is removed from said shell, said rigid members being in the form of a hollow body and a plate between which said wiper is secured, one of said rigid members being formed with a curved wall at the perimeter thereof for guiding the flexing action of said yieldable

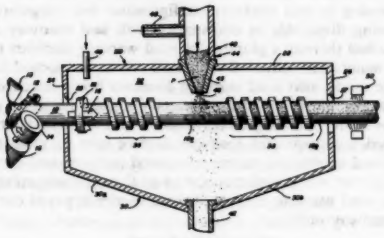
member at the perimeter thereof during the wiping of said inner surface of said shell.

4,552,091

APPARATUS FOR METALIZING METAL BODIES

Darryl Feder, 3134 Maple Leaf Dr., Glenview, Ill. 60025

Division of Ser. No. 374,282, May 3, 1982, abandoned. This application Jul. 23, 1984, Ser. No. 633,268
Int. Cl.[4] B05B *5/02*
U.S. Cl. 118—620 11 Claims



1. An apparatus for metalizing the exterior of an elongated metal body substrate of finite length, comprising, in combination:

a substantially enclosed treating chamber whose interior is pressurized above atmospheric pressure and filled by a nonoxidizing gas;

a first opening in said chamber through which one end of the elongated body is adapted to enter moving axially of the body, a second opening in said chamber through which the said one end of the elongated body and the body is adapted to leave the chamber, moving axially;

means for moving the entire length of said elongated body axially through said first opening into the chamber, and through the chamber, and then from said chamber outwardly through said second opening, while simultaneously rotating said body;

a first induction heating means in the chamber for locally heating the body to a first elevated temperature at which metalizing powder will adhere to the exterior surface of the substrate body by reason of the heat imparted to the body;

a second induction heating means in the chamber spaced for said first heating means and for locally heating the body to a second elevated temperature greater in degree of heat than said first elevated temperature;

metalizing powder supply means arranged to discharge therefrom, and into said treating chamber, a metalizing powder stream of powder particles entrained in a non-oxidizing gas that moves transversely to the rotating body, and to the body's direction of axial movement, so as to wash over the entire exterior surface of the portion of the body that has been heated to said first elevated temperature, leaving on the exterior of said heated body portion an adherent layer of metalizing powder before the body is subjected to said second elevated temperature; and

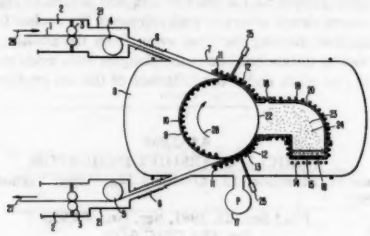
the temperature of the second elevated temperature being selected to be that at which the adherent metalizing powder layer fuses to the body.

4,552,092

VACUUM VAPOR DEPOSITION SYSTEM

Kenichi Yanagi; Toshio Taguchi; Tetsuyoshi Wada; Heisaburo Furukawa, and Kanji Wake, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 652,676
Int. Cl.[4] C23C *13/10*
U.S. Cl. 118—718 1 Claim



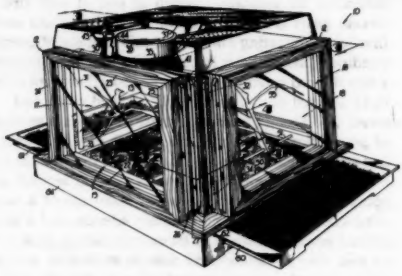
1. A vacuum vapor deposition system including a high-vacuum vapor deposition chamber provided with a rotary cell around which band steel is wound as it is passed through the chamber, a crucible for melting metal, a hood connected to said crucible for guiding vapor of said metal, a vapor deposition port of which is opposed to said rotary cell, and arcuate covers connected to said hood on a band steel entrance side and on a band steel exit side, respectively, of said vapor deposition port as spaced slightly from said rotary cell so that the covers may not come into contact with the band steel wound around said rotary cell; Characterized in that said system comprises means for heating the surface of said rotary cell up to a temperature equal to or higher than a reevaporation temperature of said metal under a vapor pressure of the vapor of said metal in the proximity of said rotary cell so that said metal may not be deposited onto the opposite end portions of said rotary cell around which said band steel is not wound, and means for heating the surfaces of said hood and said covers up to a temperature equal to or higher than a reevaporation temperature of said metal under a vapor pressure of the vapor of said metal in the proximity of said hood and said covers so that said metal may not be deposited onto said hood and said covers.

4,552,093

ANIMAL ENCLOSURE

Paul B. Puckett, Roswell, Ga., assignor to Nature's Window, Inc., Atlanta, Ga.

Filed Oct. 13, 1983, Ser. No. 541,581
Int. Cl.[4] A01K *31/06*
U.S. Cl. 119—17 9 Claims



8. An improved animal enclosure, comprising:

a frame defining a three-dimensional enclosed space for the animal;

a first removable substantially transparent panel member supported in said frame and defining a slidably removable inner wall for the enclosure;

a second removable substantially transparent panel member supported in said frame adjacent to and spaced apart from said first panel member and defining a slidably removable outer wall for the enclosure,

whereby either one of said first or said second panel members can be independently removed for cleaning without removal of the other of said panel members;

a perforated top panel attached to the enclosure; and

air filter means for drawing fresh air into the enclosure and for filtering and exhausting stale air from the enclosure, said air filter means comprising:

an air inlet located within said enclosed space and positioned to draw stale air from the enclosure;

an air pump connected to said air inlet for drawing stale air through said air inlet, said air pump being operative to draw fresh air downwardly through said top panel and through the enclosure and into said air inlet;

a filter connected to said air pump for filtering stale air drawn through said air inlet; and

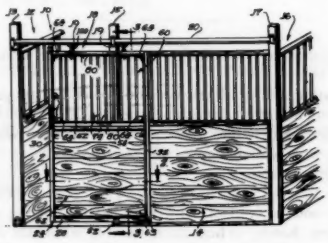
an air outlet located within said enclosure and connected to said air pump and positioned to exhaust filtered air from the enclosure.

4,552,094

HORSE STALL CONSTRUCTION

Larry Johnson, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Feb. 24, 1983, Ser. No. 469,240
Int. Cl.[4] A01K *1/00*; E06B *3/70*
U.S. Cl. 119—27 **7 Claims**



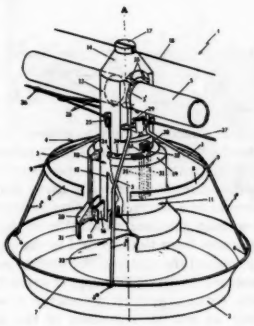
1. A construction for a door or wall of a horse stall, or the like, comprising: vertically spaced upper and lower horizontal frame members; horizontally spaced vertical side frame members coupled with said upper and lower frame members to define a rectangular frame; and panel means coupled with said lower frame member and with each of said side frame members to define a lower door portion; wherein all of said frame members comprise elongate members having substantially identical transverse, U-shaped cross sectional-dimensions; said channel members being oriented with open faces of said U-shaped cross sectional-dimensions; said channel members being oriented with open faces of said U-shaped cross sections thereof facing inwardly with respect to the rectangular frame defined thereby, and dimensioned for embracing at least outer edge portions of said panel means for defining said coupling of said panel means to said lower and said side frame members, and a pair of intermediate horizontal frame members, each comprising an elongate member substantially identical in cross-sectional configuration with said horizontal and vertical frame members, one of said intermediate frame members being oriented for embracing at least a top edge part of said panel means and the other of said intermediate frame members being oriented oppositely for facing said horizontal top frame member; grill means defining an upper door portion; and means for retaining said grill means in position intermediate said upper frame member and said intermediate frame member, said grill means comprising a plurality of vertically oriented, horizontally spaced elongate rods; and wherein said retaining means comprises a pair of elongate, U-shaped retaining channel members dimensioned for embracing and overlying the respective inwardly facing surfaces of said upper frame member and said other intermediate frame member; said retaining channel members further including a plurality of spaced apart sleeves for receiving and retaining opposite end portions of said rods.

4,552,095

FEEDING TROUGH FOR FLYING ANIMALS, PARTICULARLY TURKEYS, CAPABLE OF REGULATING THE LEVEL OF THE FEED

Ruggero Segalla, Vicenza, Italy, assignor to Sky S.p.A., Sandrigo, Italy

Filed Jun. 27, 1984, Ser. No. 625,030
Claims priority, application Italy, Jul. 13, 1983, 84950 A/83
Int. Cl.[4] A01K *5/00*
U.S. Cl. 119—53 **9 Claims**



1. A feeding trough for the adjustment of the level of the feed for flying animals and particularly turkeys wherein each trough comprises a suspended plate (**2**), a plurality of arms (**3**) radially arranged for supporting the plate, a distributing element for the feed (**4**) located above the plate, which distributing element (**4**) is internally hollow, an horizontal tubular conduit (**5**) communicating with said distribution element (**4**), said conduit (**5**) transporting the feed from a silo, said distributing element (**4**) comprising a fixed distributing element (**10**) and an element for the regulation of the level of the feed (**11**) in the shape of a sleeve, said regulating element (**11**) being essentially cylindrical and moveable and being located externally to said fixed distributing element (**10**), said arms (**3**) being directly connected with said tubular conduit (**5**), means for moving vertically said regulating element (**11**) from a lower position in the proximity of the bottom of said plate to an upper position consisting of ties (**2**) connected through transmission elements to a main cable (**27**), said cable (**27**) being located parallel to and underneath said tubular conduit (**5**) and having a length corresponding thereto and a centralized actuating device (**28**) being connected to said tie (**23**).

4,552,096

SORTING GATE ASSEMBLY

William J. Forrest, 3400 NW. Expressway, Suite 740, Oklahoma City, Okla. 73112

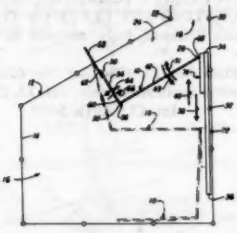
Filed Nov. 19, 1984, Ser. No. 672,940
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—155 **16 Claims**

1. A sorting gate assembly adapted for use in cooperation with a holding pen having a holding frame retainingly sur-

rounding an animal holding space and having an exit formed through a portion thereof having a first side and a second side wherein the animal holding space is sized and shaped for accommodating at least two animals and wherein the holding frame is sized and shaped for cooperating to retainingly hold animals within the animal holding space and wherein the exit is sized and shaped to permit an animal to pass therethrough and exit from the animal holding space, the sorting gate assembly comprising:

a sorting gate having a first end and a second end; and

a gate support assembly having a first end and a second end, the first end of the sorting gate being movably connected to the gate support assembly for movement in a first direction generally toward the gate support assembly and for



movement in a second direction generally away from the gate support assembly, the gate support assembly movably supporting the sorting gate for movement of the sorting gate in a first direction generally away from the exit and for movement in a second direction generally toward the exit, the sorting gate being movable in the first direction generally away from the exit and in the second direction generally toward the exit and the sorting gate being movably connected to the gate support assembly for maneuvering the sorting gate to maneuver a selected sorted animal into an exit area portion of the animal holding space generally near the exit wherein the sorting gate cooperates with a portion of the holding frame to confine an animal in the exit area for exiting the animal through the exit in the holding frame.

4,552,097

STEAM GENERATOR WITH A STATIONARY FLUIDIZED-BED HEARTH

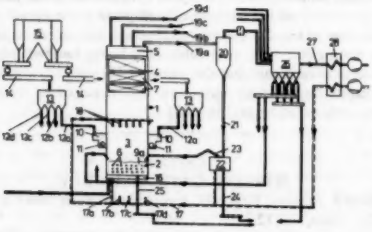
Hans-Georg Jarmuzewski, Oberhausen, Fed. Rep. of Germany, assignor to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jan. 23, 1985, Ser. No. 693,978

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 3406200

Int. Cl.⁴ F22B *1/00*

U.S. Cl. 122—4 D **9 Claims**



1. A steam generator comprising: a stationary fluidizedbed hearth; a combustion chamber and a gas flue containing outlet-side heating surfaces above said fluidized-bed hearth; immersion-type heating surfaces arranged in said fluidized bed; said fluidized bed being divided into a plurality of individually controlled sections; said steam generator comprising further a single-pass boiler; a gas extractor tube and a cyclone connected to said gas extractor tube at the upper end of said boiler above each section of said fluidized bed; said cyclone having discharge means passing cyclone disclosure to a respective predetermined section; belt-charging means associated with each section and having a spread corresponding to the cross-section of a section; and secondary air feeds arranged above each section.

4,552,098

CONVECTION SECTION ASH MONITORING

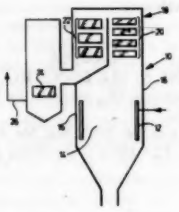
John R. Wynnyckyj, Kitchener; Edward Rhodes, Waterloo, and Robert Marr, Kitchener, all of Canada, assignors to University of Waterloo, Waterloo, Canada

Continuation of Ser. No. 583,573, Feb. 24, 1984,. This application May 15, 1985, Ser. No. 734,175

Claims priority, application Canada,

Int. Cl.⁴ F22B *37/18*

U.S. Cl. 122—379 **15 Claims**



1. A method of controlling a steam generator, which comprises:

combusting fuel in a furnace section of said steam generator to form a flowing hot gas stream which flows out of said furnace section into a convection section of said steam generator, which convection section contains heat exchange surfaces,

flowing said hot gas stream through said convection section over and in contact with said heat exchange surfaces therein, thereby to heat steam flowing within the surfaces,

directly measuring the temperature of the gas stream at two locations in said convection section spaced-apart in the direction of flow of the gas stream and between which is located a selected number of said heat exchange surfaces in said convection section,

calculating the difference in temperature between said two locations as a measure of the build-up of ash on said selected number of heat exchange surfaces in said convection section, and

activating cleaning of said selected number of heat-exchange surfaces in response to a predetermined level of build-up of ash.

4,552,099

ANTICIPATORY BOILER FEEDPUMP SUCTION HEAD CONTROLLER SYSTEM

Alan Martens, Berwyn; Milton M. Hobbs, Marple Township, Delaware County, and Beanie E. Snow, West Chester, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1984, Ser. No. 664,640

Int. Cl.⁴ F22D *5/26*

U.S. Cl. 122—451.1 **7 Claims**

1. In a steam boiler system including:

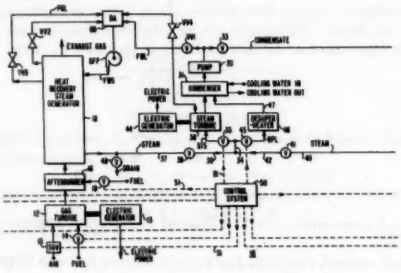
boiler means having a deaerator comprising a vapor phase

section and a liquid phase section for degassing feedwater for said boiler means;

a boiler feedpump having an inlet and a suction head associated thereto for pumping degassed feedwater from an outlet of said liquid phase section to said boiler means, the combination of:

means for deriving a first signal indicative of the temperature at the inlet of said feedpump;

means for deriving a second signal indicative of the temperature at the outlet of said liquid phase section;



means for deriving a third signal indicative of water flow from said outlet to said inlet;

means for combining said third signal with one of said first and second signals for generating an anticipatory signal representative of the desired pressure in said suction head of said feedpump; and

control means responsive to actual pressure in said suction head and to said anticipatory signal for controlling pressure in said suction head.

4,552,100

THROTTLE LEVER DEVICE OF POWER-DRIVEN BACKPACK TYPE MACHINE

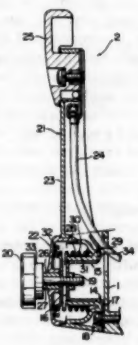
Yukio Kawaharazuka, Ageo, and Giichi Iida, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,446

Claims priority, application Japan, Nov. 17, 1983, 58-176750[U]

Int. Cl.⁴ F02B *63/00*

U.S. Cl. 123—2 **1 Claim**



1. In a power-driven backpack type machine including a main body having an internal combustion engine serving as a power source, a throttle lever device comprising:

a boss pivotably connected to one side of the main body;

an arm extending from the boss;

a throttle lever supported at a forward end of the arm for controlling the operation of the internal combustion engine;

locking means for selectively lockingly securing the boss to the main body in a position in which the arm is upright and substantially parallel to the vertical longitudinal axis of the main body and in a position in which the arm extends forwardly of the main body;

resilient pressing means for forcing the boss against the main body with an adjustable biasing force; and

adjusting means for adjusting the biasing force exerted by the resilient pressing means.

4,552,101

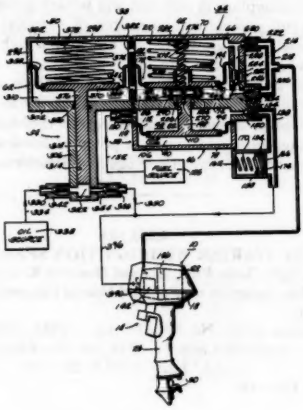
FLUID PRESSURE ACTUATED MOTOR WITH PNEUMATICALLY-COUPLED PISTONS

Gaylord M. Borst, and Frank J. Walsworth, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 7, 1983, Ser. No. 464,197

Int. Cl.⁴ F02B *33/02*

U.S. Cl. 123—73 AD **9 Claims**



1. A fluid actuated motor assembly comprising a first fluid actuated motor including a first reciprocating piston driven through a first stroke length by a pressure differential across said first reciprocating piston, and a second fluid pressure actuated motor in communication with said first fluid pressure actuated motor and including a second reciprocating piston driven through a second stroke length by said pressure differential across said first reciprocating piston, and means for varying said second stroke length relative to said first stroke length in response to variation in the magnitude of said pressure differential across said first piston.

4,552,102

SYSTEM FOR IMPROVING THE STARTING OF DIESEL ENGINES IN COLD WEATHER

Edward J. Egle, 293 S. Circle Dr., Palatine, Ill. 60067

Continuation-in-part of Ser. No. 403,861, Jul. 30, 1982, abandoned, which is a division of Ser. No. 260,179, May 4, 1981, abandoned. This application Oct. 15, 1984, Ser. No. 661,262

Int. Cl.⁴ F02N *17/00*

U.S. Cl. 123—179 H **7 Claims**

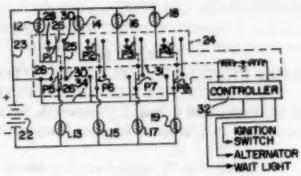
1. A system utilizing glowplugs electrically connectable to a source of potential for heating the fuel provided to an associated diesel engine for facilitating the starting of the engine, particularly in cold weather, and responsive to engine and atmospheric conditions, comprising, in combination:

(a) a first group of glowplugs;

(b) a second group of glowplugs;

(c) selectively actuatable switching means having a plurality of movable contacts and at least first and second stationary contacts;

(d) controller responsive to engine and atmospheric conditions as a means for actuating said movable contacts to selectively contact said first and second stationary contacts;



(e) said switch means in a first condition connecting each of said glowplugs in said first and second groups to receive the full voltage of said source of potential thereacross, whereby said glowplugs are heated to a high temperature at a relatively fast rate; and

(f) said switch means in a second condition connecting a glowplug of said first group, respectively in series with a glowplug of said second group to thereby reduce the voltage from said source of potential for maintaining the temperature of the glowplugs at a preselected level.

4,552,103

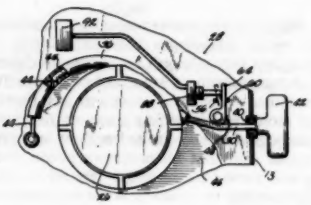
MANUAL STARTER WITH IGNITION SPARK RETARD

Gene F. Baltz, Lake Villa, Ill., and Donovan K. Jourdan, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 529,337, Sep. 6, 1983, abandoned. This application Sep. 10, 1984, Ser. No. 649,160

Int. Cl.[4] F02P *5/14;* **F02N** *3/00*

U.S. Cl. 123—186 **7 Claims**



6. A manual starter for an internal combustion engine including a drive member mounted for rotation and operable to start the engine when rotated, said starter including a flexible pull element mounted for movement between a normally retracted position and an extended position and operably engageable with the drive member to start the engine in response to movement of said flexible pull element to an extended position, said means for retarding ignitiion spark timing in response to movement of said flexible pull element toward an extended position, said means for retarding spark timing, including a movably mounted member in which is located in frictional contact with said pull element and which is movable in response to movement of said pull element toward the extended position, and means responsive to movement of said member for retarding spark timing.

4,552,104

CRANKSHAFT OF V-6 INTERNAL COMBUSTION ENGINE

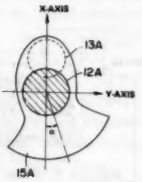
Kenjiro Hara, Yokohama, and Haruya Shirose, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jun. 14, 1984, Ser. No. 620,517

Claims priority, application Japan, Jun. 20, 1983, 58-110412

Int. Cl.[4] F16F *15/26*

U.S. Cl. 123—192 R **3 Claims**



1. A crankshaft of a V-6 internal combustion engine comprising:

first, second, third and fourth main bearing journals disposed successively in a direction from a first end section to a second end section of said crankshaft;

first and second crank pins disposed successively in said direction between said first and second main bearing journals;

third and fourth crank pins disposed successively in said direction between said second and third main bearing journals;

fifth and sixth crank pins disposed successively in said direction between said third and fourth main bearing journals;

first, second, third, fourth, fifth, sixth, seventh, eighth, and ninth crank arms disposed successively in said direction to connect adjacent ones of said main bearing journals and crank pins;

first and second end balance weights connected to said first and ninth crank arms, respectively, the first crank arm connecting said first main bearing journal and said first crank pin, said ninth crank arm connecting said sixth crank pin and said fourth main bearing journal, said first and second end balance weights being located on the opposite side of center axis of said crankshaft from said first and sixth crank pins, respectively;

a first middle balance weight connected to said second crank arm and located on the opposite side of the crankshaft center axis from said first and second crank pins, said second crank arm connecting said first and second crank pins, said first middle balance weight having a center axis offset a first predetermined angle from an extension of a first bisector of an angle formed by a first line which connects center axis of said first crank pin with the crankshaft center axis and a second line which connects center axis of said second crank pin with the crankshaft center axis in a plane to which the crankshaft center axis is perpendicular;

a central balance weight connected to said fifth arm and located on the opposite side of the crankshaft center axis from said third and fourth crank pins, said fifth crank arm connecting said third and fourth crank pins;

a second middle balance weight connected to said eighth crank arm and located on the opposite side of the crankshaft center axis from said forth and sixth crank pins, said eighth crank arm connecting said fifth and sixth crank pins, said second middle balance weight having a center axis offset said first predeterminded angle from an extension of a second bisector of an angle formed by a third line which connects center axis of said fifth crank pin with the crankshaft center axis and a fourth line which connects center axis of said sixth crank pin with the crankshaft center axis in said plane;

said offset of said first predetermined angle of said first and second middle balance weights causing an unbalance of the crankshaft;

said first end balance weight having a center axis offset a second predetermined angle from an extension of a line which connects center axis of said first crank pin and the crankshaft center axis in said plane, said second end balance weight having a center axis thereof offset said second predetermined angle from an extension of a line which connects center axis of said sixth crank pin and the crankshaft center axis in said plane;

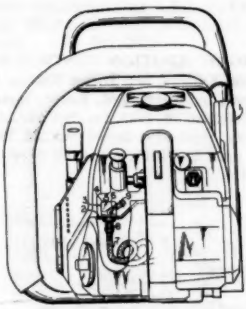
said offset of said first and second end balance weights balancing said unbalance of the crankshaft caused by said offset of said first and second middle balance weights.

4,552,105

FUEL PIPE JOINT

Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 646,928
Claims priority, application Japan, Sep. 9, 1983, 58-139810[U]
Int. Cl.⁴ F02B *77/08*
U.S. Cl. 123—198 R **1 Claim**



1. A fuel pipe joint for connecting fuel pipes through which fuel is supplied from a fuel tank to an internal combustion engine, said fuel pipe joint comprising: a main body made of a transparent synthetic resinous material and mounted directly on an upper portion of said fuel tank, said main body having solidly a first pipe connector portion projected from the lower side of said main body into said tank and connected to a fuel pipe for sucking the fuel from said fuel tank, a second pipe connector portion projected from one side of said main body and connected to another fuel pipe leading to said internal combustion engine, and a fuel passage formed in said main body and providing a communication between said first and second pipe connector portions.

4,552,106

INTERNAL COMBUSTION ENGINE

Lewis C. Spence, Jupiter, Fla., assignor to John P. Ohl, Palm Beach, Fla.

Filed Dec. 3, 1982, Ser. No. 446,502
Int. Cl.⁴ F02B *3/00*
U.S. Cl. 123—198 A **1 Claim**

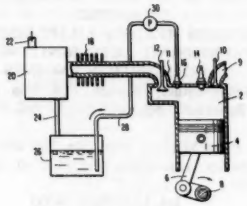
1. An internal combustion engine operating on a two-stroke cycle or a four-stroke cycly having a power stroke, comprising:

means for providing a combustible fuel to said engine at the start of the power stroke;

first means for igniting said fuel during the power stroke to produce mechanical power;

means for providing a non-combustible fluid to said engine during the power stroke after said first means has ignited said fuel and after said ignited fuel has substantially reached the point of flame-out in order to transfer thermal energy from said ignited fuel to said non-combustible fluid, thereby causing expansion of said fluid during the power stroke; and

means for converting expansion of said fluid to mechanical power during the power stroke,



wherein said non-combustible fluid comprises a fluid having good temperature expansion characteristics and which condenses at a substantially faster rate than burned combustible fuel exhausted from the engine, and

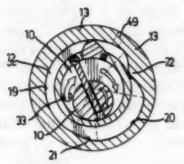
wherein said non-combustible liquid comprises a halogen.

4,552,107

ROTARY INTERNAL COMBUSTION ENGINE

Chin L. Chen, No. 1, Alley 20, La. 99, Wan-Shou Rd., Sec. 3, Tao-Yuan, Taiwan

Filed Dec. 21, 1983, Ser. No. 564,010
Int. Cl.⁴ F02B *53/00*
U.S. Cl. 123—240 **9 Claims**



1. An internal combustion engine of the rotary type comprising,

a housing,

at least one rotor assembly having a first drum rotor and a second cylinder rotor eccentrically mounted for rotation in said housing, said second rotor being located inside said first drum rotor and in contact with the internal surface of said first drum rotor, wherein said first and second rotors bound a first chamber of crescent shape, and the periphery of said first rotor and the inner surfaces of said housing bound a second chamber of annulus shape which includes a first segmented annulus portion, a second segmented annulus portion of greater radial width than and upstream of said first annulus portion, and in which said first rotor has a radial opening for communication between said first and second chambers,

intake means for admitting a gas-fuel mixture communicated with said first chamber,

exhaust means for releasing the combustion gases communicated with said second member,

first vane means pivotally mounted on the wall of said first drum rotor, said first vane means dividing said first chamber into two variable volumes for compressing the gas-fuel mixture during rotation, and second vane means including at least one second vane member pivotally mounted to said first drum rotor in said opening for swinging about an axis parallel to the axes of rotation of said rotors for intermittently interrupting communication be-

tween said first and second chambers, said second vane having an edge sealingly engaged with the inner surfaces of said housing, said opening being opened when said second vane member runs in said second segmented annulus portion and being closed when said second vane member runs in said first segmented annulus portion.

4,552,108

CYLINDER HEAD OF LIGHT METAL FOR AIR-COMPRESSING, AUTO-IGNITING INTERNAL COMBUSTION ENGINES

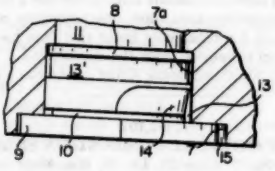
Christoph Schausberger, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,809

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220753

Int. Cl.⁴ F02B *19/00*

U.S. Cl. 123—270 **8 Claims**



1. A cylinder head of light metal for diesel internal combustion engines, comprising an auxiliary combustion chamber delimited on a side toward a main combustion chamber by an insert means made of a highly heat-resistant material, said insert means being disposed in a stepped bore disposed in the bottom of the cylinder head with a snug fit over a first portion of its outer surface, a second portion of the outer surface of the insert means defining along with a wall of the stepped bore an air gap which extends part way around the circumference of the insert, the air gap facing a zone in the cylinder head bottom which is hot when the engine is running and which expands under the influence of heat, exposure of said insert means to said main combustion chamber being generally limited to the area of the second portion which faces the hot zone in the cylinder head which expands under the influence of heat, said insert means being in contact with a relatively cool area of the cylinder head bottom diametrically opposite the second portion in a thermally conducting manner.

4,552,109

PROCESS FOR STABILIZING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE WITH CONTROLLED IGNITION

Yves Boccadoro, Feucherolles, and Paul Chastagner, Les Clayes sous Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 30, 1983, Ser. No. 567,000

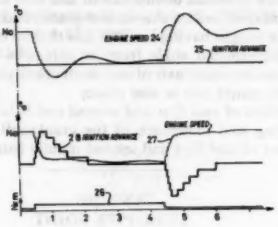
Claims priority, application France, Dec. 30, 1982, 82 22146

Int. Cl.⁴ F02P *5/04*

U.S. Cl. 123—339 **10 Claims**

1. A process for stabilizing the idle speed of an internal combustion engine with controlled ignition, wherein an angle of ignition advance to be generated is determined as a function of predetermined operating parameters of the engine, including engine rotation speed and intake manifold pressure, comprising:

determining at each engine cycle if the engine is in idle condition, and if so, setting the ignition advance by measuring engine speed and producing an engine speed signal related thereto, low-pass filtering the engine speed signal, measuring the intake manifold pressure of the engine, generating a static advance signal (Avs) based on the measured intake manifold pressure and the low-pass filtered engine speed signal, high-pass filtering the measured engine speed signal to form a corrective term in the form



of a dynamic advance signal, algebraically adding the static advance signal to the dynamic advance signal to produce an angle of ignition advance signal (Av), and controlling the ignition advance of the engine based on said signal Av.

4,552,110

ELECTRONIC IGNITION CONTROL SYSTEM

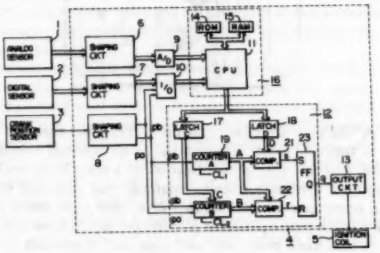
Tatsuya Yoshida, Katsuta, and Hirosi Katada, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,233

Claims priority, application Japan, Nov. 22, 1982, 57-203760

Int. Cl.⁴ F02P *5/08, 5/10, 5/14*

U.S. Cl. 123—416 **6 Claims**



1. An electronic ignition control system wherein a rotational speed of an engine is sensed on the basis of a reference signal indicative of a crank reference position for the purpose of spark advance control, said system comprising a first arithmetic and logic unit for carrying out a computation in synchronism with the rotation of the engine, and a second arithmetic and logic unit for carrying out a computation at intervals of a predetermined period of time, said first arithmetic and logic unit computing a reference ignition position using the sensed rotational speed of the engine as a parameter, said second arithmetic and logic unit correcting said reference ignition position using a plurality of information indicative of the operating condition of the engine including the information of the engine rotational speed as parameters, said crank reference position includes a leading edge and a trailing edge defining a predetermined width therebetween, said reference signal includes a first reference signal indicative of the position of said leading edge and a second reference signal indicative to the position of said trailing edge, and wherein said first arithmetic and logic unit includes a first counter counting a first clock signal having a predetermined frequency applied at its count input and starting to count said first clock signal after being reset by said second reference signal, and a second counter

counting a second clock signal having a frequency higher than that of said first clock signal applied as its count input, said second counter starting to count said second clock signal in response to the application of said first reference signal and ceasing to count said second clock signal after being reset by said second reference signal, and a signal indicative of said reference ignition position is generated when coincidence is reached between the data counts of said first and second counters.

4,552,111

ENGINE KNOCKING DETECTING MEANS

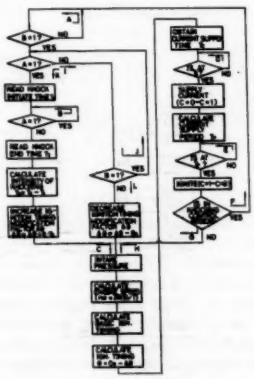
Yoshitaka Tahara, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 18, 1983, Ser. No. 514,846

Claims priority, application Japan, Jul. 20, 1982, 57-128190

Int. Cl.⁴ F02P *5/14*; F02D *5/04*; G01I *23/22*

U.S. Cl. 123—425 **7 Claims**



1. Engine knocking detecting device to avoid the superpositioning of succeeding integrated signals during repetitive engine knocking comprising:

engine vibration sensing means for sensing engine vibrations and producing electric signals representing the engine vibrations;

knocking detecting circuit means including:

knocking signal discriminating means for detecting signals representing engine vibrations caused by engine knocking; and,

knocking intensity detecting means for detecting durations of the signals representing the engine knocking vibrations to thereby detect intensity of the engine knocking;

said knocking intensity detecting means including:

means for determining a sampling period in each cycle of engine operation;

means for sensing the signals detected by said discriminating means in said sampling period and determining the duration as a time between start and end of the signals detected by the discriminating means in said sampling period; and,

means for producing a knocking intensity signal which increases in response to an increase in the duration of the signals representing the engine knocking.

4,552,112

VALVE TIMING CONTROL FOR INTERNAL COMBUSTION ENGINES

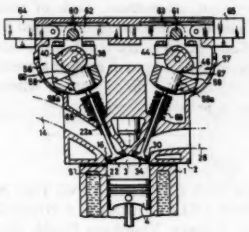
Akihito Nagao; Kouichi Takahashi; Shunji Masuda; Misao Fujimoto, and Toshio Nishikawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 25, 1984, Ser. No. 634,349

Claims priority, application Japan, Jul. 25, 1983, 58-136260

Int. Cl.⁴ F01L *1/34*; F02B *31/02*

U.S. Cl. 123—432 **6 Claims**



1. An engine intake system including combustion chamber means, first intake port means opening to said combustion chamber means, second intake port means opening to said combustion chamber means, first intake valve means associated with said first intake port means, second intake valve means associated with said second intake port means, first valve actuating means for providing an opening period of said first intake valve means in each engine operating cycle at a first timing, second valve actuating means for providing an opening period of said intake valve means in each engine operating cycle at a second timing, means for preventing intake gas from passing through said second intake port means at least during low speed, light load engine operation, and timing changing means for changing at least said first timing so that an overall valve opening period defined by said first and second timings is changed in accordance with engine operating conditions.

4,552,113

FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

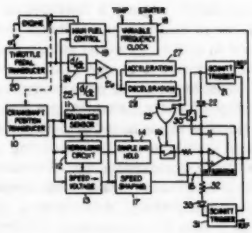
Malcolm Williams, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 27, 1980, Ser. No. 125,107

Claims priority, application United Kingdom, Mar. 14, 1979, 7908992

Int. Cl.⁴ F02B *3/00*; F02M *7/00*

U.S. Cl. 123—436 **4 Claims**



1. An internal combustion engine fuel control system comprising a main fuel control sensitive to one or more engine operating parameters scheduling fuel flow to the engine, and a roughness trim control comprising a roughness sensor circuit providing a roughness signal related to the roughness of run-

ning of the engine, said roughness trim control including an integrator having an output providing an input signal to the main fuel control so as to vary the fuel flow to the engine to obtain a desired level of roughness, and a first active clamp circuit which has an input and an output connected respectively to an output and input of the integrator, said clamp circuit comprising a means for preventing said integrator output from exceeding a maximum acceptable level of enleanment, and a second active clamp circuit comprising means for preventing said integrator output from exceeding a minimum acceptable level of enleanment, each of said active clamp circuits has its input connected to the output of the integrator and its output connected to the input of the integrator so as to maintain the integrator output at or near a predetermined level when that clamp circuit is in operation, wherein each clamp circuit includes a Schmidt trigger circuit.

4,552,114

APPARATUS FOR CONTROLLING THE NUMBER OF OPERATIVE CYLINDERS OF A DIESEL ENGINE

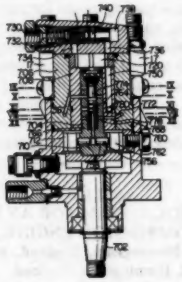
Yukinori Sano, Katsuta; Yoshikazu Hoshi, Ibaraki, and Ikuo Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 601,654, Apr. 18, 1984, abandoned, which is a continuation of Ser. No. 413,127, Aug. 30, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 685,258

Claims priority, application Japan, Sep. 2, 1981, 56-138845

Int. Cl.[4] F02M *69/00, 63/02*

U.S. Cl. 123—481 **6 Claims**



1. A fuel injection arrangement comprising a fuel injection pump, the fuel injection pump including a cylindrical body, a sleeve disposed within said cylindrical body, a rotary distributor means disposed in said sleeve and adapted to be driven by an internal combustion engine, a longitudinal path formed along an axial line of said rotary distributor means, a shuttle slidably disposed in said longitudinal path, a first electromagnetic valve means disposed at one side of said shuttle and adapted to be driven by a signal from a control circuit in order to meter and supply fuel for determining a fuel injection period, a second electromagnetic valve means disposed at the other side of said shuttle means for measuring and supplying fuel to be injected, a compression pump means disposed beneath said rotary distributor means, said compression pump means including a rotor means, roller means, plunger means, and annular cam means for compressing the fuel determining said injection period, and a distributing means disposed above said rotary distributor means for supplying the fuel to a selected fuel injection valve, wherein said shuttle is moved by an action of said compression pump by the rotation of said rotary distributor means to thereby pressurize the injection fuel, and the pressurized fuel is supplied to a selected fuel injection valve by a rotation of said rotary distributor means.

4,552,115

AIR-FUEL RATIO CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Yoshinori Okino, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 13, 1984, Ser. No. 599,973

Claims priority, application Japan, Apr. 14, 1983, 58-66226

Int. Cl.[4] F02D *5/00*

U.S. Cl. 123—489 **9 Claims**

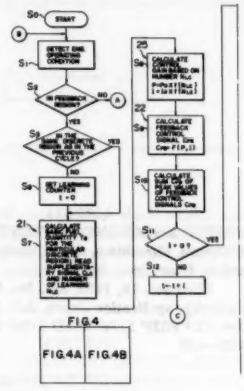
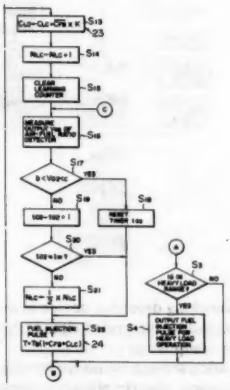


FIG.4

FIG.4A FIG.4B



1. An air-fuel ratio control system for an internal combustion engine comprising: air-fuel ratio detecting means for detecting the air-fuel ratio of a mixture supplied to the engine to produce an air-fuel ratio signal, engine operating condition detecting means for detecting an operating condition of the engine to produce an engine operating condition signal, basic fuel quantity setting means responsive to said engine operating condition signal for determining a basic quantity of fuel supply under a specific engine operating condition and producing a basic fuel quantity signal, control gain memorizing means having memories of at least one control gain, feedback control means responsive to said air-fuel ratio signal and the control gain for producing a feedback control signal for modifying the basic fuel quantity signal so that the air-fuel ratio of the mixture is changed toward a desired value, supplementary signal producing means for producing based on said feedback control signal a supplementary signal for supplementing said basic fuel quantity signal, supplementary signal memorizing means for memo-

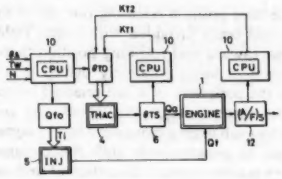
rizing the supplementary signal, substituting means for substituting for the supplementary signal memorized in the supplementary signal memorizing means of a supplementary signal newly produced by the supplementary signal producing means, fuel supply control means for controlling the quantity of fuel supplied to the engine in accordance with the basic fuel quantity signal, with the feedback control signal and with the supplementary signal which is memorized in the supplementary signal memorizing means, control gain modifying means for decreasing the control gain from said control gain memorizing means in response to an increase in the number of times wherein supplementary signals are substituted for each other.

4,552,116

ENGINE CONTROL APPARATUS

Hiroshi Kuroiwa, Hitachi; Tadashi Kirisawa, Katsuta; Teruo Yamauchi, Katsuta, and Yoshishige Oyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1984, Ser. No. 641,337
Claims priority, application Japan, Aug. 26, 1983, 58-155096
Int. Cl.[4] F02B *3/00*; F02D *9/00*
U.S. Cl. 123—489 **4 Claims**



1. In an engine control apparatus including means for controlling a rate of fuel supplied to an engine, means for controlling a rate of intake air drawn into the engine by changing an opening of a throttle valve actuated by a throttle actuator, an acceleration pedal position sensor means for detecting a position of an acceleration pedal operated by an operator and providing an output signal of the position of the acceleration pedal, further sensor means for detecting engine conditions and providing output signals of sensed engine conditions, said further sensor means including an engine temperature sensor and an engine rotational speed sensor, and a control circuit means for inputting output signals from said acceleration pedal position sensor means and said further sensor means for producing control signals for determining a rate of fuel supply in accordance with a position of said acceleration pedal, the engine conditions, and an opening of said throttle valve is controlled in accordance with a command opening determined in accordance with the rate of the fuel supply, the control apparatus comprising:

first closed loop control means for detecting the throttle valve opening and for effecting a control to make the throttle valve opening converge at said command opening, said first closed loop control means including a throttle opening sensor means for detecting an opening of said throttle valve, said control circuit means, and said throttle actuator, and

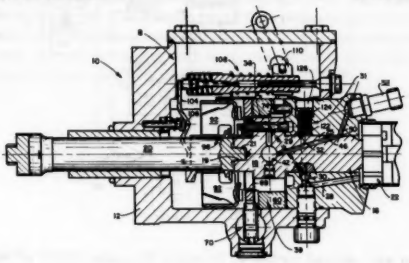
second closed loop control means for detecting the air-fuel ratio of the air-fuel mixture supplied to the engine and for effecting a control to make the air-fuel ratio converge at a command air-fuel ratio, said second closed loop means including an air-fuel ratio sensor means for detecting oxygen concentration in exhaust gas of the engine, said control circuit means, and said throttle actuator.

4,552,117

FUEL INJECTION PUMP WITH SPILL CONTROL MECHANISM

Ilija Djordjevic, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Oct. 9, 1984, Ser. No. 658,887
Int. Cl.[4] F02M *37/04*
U.S. Cl. 123—506 **29 Claims**



1. In a rotary fuel injection pump for an internal combustion engine, having a housing, a rotor rotatable in the housing, a charge pump having a plurality of radially extending plunger bores in the rotor and a plunger pump for each plunger bore having a pumping plunger reciprocable in the bore, the pumping plungers having outward fuel intake strokes and inward fuel delivery strokes for supplying high pressure charges of fuel for fuel injection, and a cam ring surrounding the rotor and engageable with the plunger pumps to reciprocate the plungers as the rotor rotates, and a spill control mechanism having spill valve means connected to the charge pump for spill control of the said high pressure charges of fuel, the improvement wherein the spill valve means comprises at least one rotary spill valve having a valve bore in the rotor connected to the charge pump and a rotary spill valve member rotatably mounted within the valve bore, and wherein the spill control mechanism comprises first means for rotating each rotary spill valve member in unison with the rotor and in synchronism with the reciprocable movement of the pumping plungers for spill control of the said high pressure charges of fuel.

4,552,118

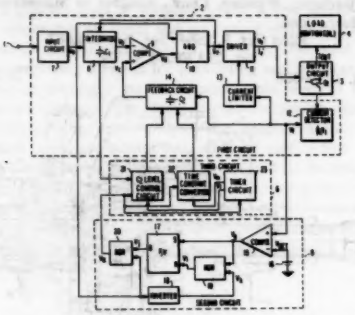
CONTROL CIRCUIT FOR CONTROLLING OUTPUT PULSE WIDTH USING NEGATIVE FEEDBACK SIGNAL

Hirokazu Fukaya, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 19, 1984, Ser. No. 590,662
Claims priority, application Japan, Mar. 17, 1983, 58-44734
Int. Cl.[4] F02P *3/04*
U.S. Cl. 123—609 **18 Claims**

1. A circuit comprising a first circuit generating an output pulse signal in response to an input signal and having a feedback circuit producing a feedback signal in response to said output pulse signal, said output pulse signal having a pulse width controlled by said input and feedback signals, a second circuit detecting said pulse width of said output pulse signal and generating a detection signal when said pulse width is

shorter than a predetermined width, and a third circuit invalidating said feedback signal in response to said detection signal



from said second circuit to broaden the pulse width of said output pulse signal to be longer than said predetermined width.

4,552,119

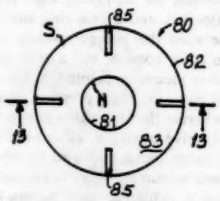
MAGNETIC PULSE TIMER

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Dec. 11, 1984, Ser. No. 680,537

Int. Cl.[4] F02P 5/04

U.S. Cl. 123—617 **3 Claims**



1. A rotor for a magnetic pulse timer of an ignition system used by a fuel burning engine, characterized by:

a single piece rotor of permanently magnetized material coupled to said engine for rotation about its central cylindrical axis, said rotor having inner and outer peripheral edges of opposite magnetic polarities and regularly spaced slots at the outer edge where the magnetic polarity is the same across the slots at said outer peripheral edge, said slots being generally parallel to the axis and including non-magnetic material retained in said slots, said slots dividing the outer edge into a plurality of segments wherein each of the segments is greater in width than any of the slots.

4,552,120

BATTING INSTRUCTION SYSTEM

Kent J. Nall, 4322 Troup, Kansas City, Kans. 66102; W. Christopher Barteldes, Lawrence, Kans.; David W. Payne, Prairie Village, Kans.; Charles P. Rome, Overland Park, Kans., and Wayne A. Abrams, Kansas City, Kans., assignors to Kent J. Nall, Kansas City, Kans.

Filed Sep. 30, 1982, Ser. No. 431,817

Int. Cl.[4] F41B 3/04

U.S. Cl. 124—1 **2 Claims**

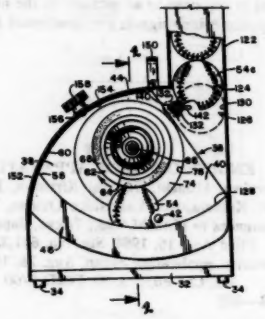
1. A ball toss device for sequentially lofting baseballs or the like at spaced intervals toward a target area such as home plate, said device comprising:

a ball-guiding track having a ball-receiving end and a ball-discharging end;

a rotary impeller adjacent said track and between said opposite ends thereof in disposition for engaging a ball presented thereto in the track and for thereupon propelling the same off said discharge end of the track into the air; and

means for successively delivering a supply of balls to said receiving end of the track at a metered rate of delivery,

said delivering means including a throat through which the balls must pass as they approach said track, said throat having a lateral component thereof shiftable between a first position retaining a ball against passage to the track



and a second position releasing the ball to the track, said component being provided with means yieldably biasing the same toward said retaining position thereof,

said component being rotatively driven in a direction to engage the periphery of a ball retained by the throat and urge the same through the throat, the reaction force caused by such urging movement by the component being sufficient to progressively shift the component to said releasing position against the action of said yieldable biasing means.

4,552,121

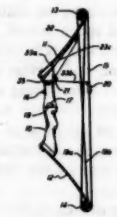
ARCHERY SIGHTS

Mahlon L. Treaster, R.D. 2, Box 288 Cafferty Rd., Harpursville, N.Y. 13787

Filed Sep. 13, 1984, Ser. No. 649,947

Int. Cl.[4] F41B 5/00

U.S. Cl. 124—87 **5 Claims**



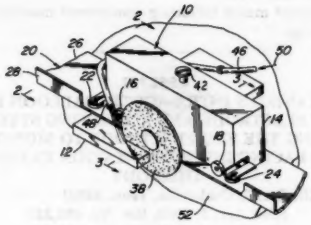
1. In archery apparatus having a bow carrying a front sight, a bowstring, and a back sight carried on said bowstring, the combination of cord means extending between said bow and said back sight, said cord means comprising a resiliently extensible section attached to said bow and an inelastic section attached to said back sight; and line-guiding means for training said resiliently extensible section to lie in a direction angularly displaced from a line between said front sight and back sight when said bowstring is drawn, so that breaking or detachment of any portion of said cord means causes each portion of said resiliently extensible section to move in a direction displaced from said line.

4,552,122

PORTABLE APPARATUS FOR SHAPING GLASS BY ABRASION

John M. Kelly, 131 Sugartown Rd., Devon, Pa. 19333

Filed Dec. 16, 1983, Ser. No. 562,487
Int. Cl.[4] B28D *1/04*
U.S. Cl. 125—14 **17 Claims**



1. A portable apparatus for shaping glass by abrasion, comprising:

a carriage, said carriage being comprised of a first portion and a second portion and being provided with a plurality of guide means;

a track comprising a first member and a second member, said first member being hingedly attached to said second member and adapted to receive the guide means of the first portion of said carriage, said first member being adjustable about said hinge with respect to said second member, said guide means of said carriage engaging said track to move along said track;

a pneumatic motor carried by said carriage;

said first portion of said carriage being adapted to ride on said track, said second portion of said carriage being adapted to carry said pneumatic motor, said second portion of said carriage being movable on said first portion of said carriage in a direction perpendicular to the direction of movement of said first portion of said carriage on said track;

an abrasive blade driven by said pneumatic motor for rotation; and,

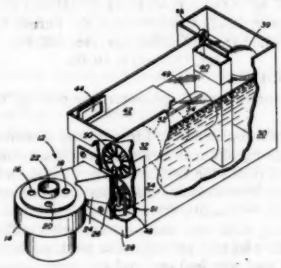
fluid coolant spray means carried by said carriage and adapted to spray fluid coolant at the abrading surface of said cutting blade during glass abrading operations.

4,552,123

GAS-FIRED STEAM COOKER

Joseph R. Birkner, West Peabody; Maurice Nunes, Arlington, and James R. Hurley, East Weymouth, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Dec. 12, 1984, Ser. No. 681,033
Int. Cl.[4] F24D *1/00*; F28F *21/00*
U.S. Cl. 126—369 **6 Claims**



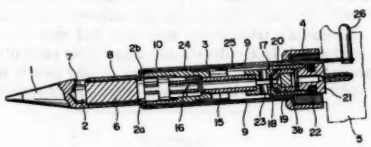
1. A self-contained, compact steamer comprising a compartment for containing food to be cooked by steam, a powered combustion system for generating heated products of combustion, a water chamber, means for maintaining a quantity of water at a predetermined level in said water chamber, at least one tube into which said heated products of combustion are directed, said tube being submerged in said water chamber whereby said water is converted to steam, an exhaust flue for carrying away said products of combustion after their passage through said tube, at least one outlet for steam being formed in said water chamber above said predetermined level, said outlet being in communication with said compartment whereby said food is cooked by said steam.

4,552,124

HEAT PROCESSING APPARATUS

Masahiko Nakajima, Tokyo, Japan, assignor to Nakajima Dokosho Co. Ltd., Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 620,326
Claims priority, application Japan, Feb. 20, 1984, 59-30064; Feb. 20, 1984, 59-30066
Int. Cl.[4] B23K *3/02*
U.S. Cl. 126—413 **11 Claims**



1. A heat processing apparatus using a liquefied gas as a heat source comprising:

a nozzle for jetting out a combustible gas from a liquefied gas tank by way of a gas discharge valve assembly,

a gas mixture generation means disposed at the exit of said nozzle for introducing external air to a stream of said combustible gas jetted out from said nozzle under the ejector effect to thereby generate a gas mixture,

a gas mixture supply means for supplying the thus generated gas mixture to the downstream portion of the apparatus,

means including openings for igniting said gas mixture disposed at the downstream end of said gas mixture supply means surrounding the stream of said gas mixture at the downstream end of said gas mixture supply means for introducing additional external air through said openings and for igniting said gas mixture,

means forming a shutter mechanism to open and close said ignition openings,

means forming a combustion chamber disposed at the downstream end of said ignition openings and having an inlet at its upstream end for receiving the stream of said gas mixture and an exhaust gas port at its downstream end for discharging exhaust gases,

a combustion catalyst disposed to the inside of said combustion chamber, said catalyst being formed with gas flow passages extended continuously from the upstream to the downstream ends of said chamber so as to decrease the flow resistance to said gas mixture passing therethrough, and

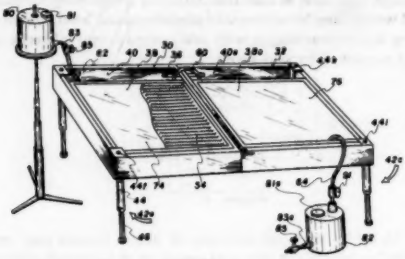
an iron tip connected to the downstream end of said combustion chamber for use in the fabrication of a work.

4,552,125

PORTABLE SOLAR WATER HEATER

German Borodulin, 2518 Clement St., #4; Alexander Shkolnik, 4434 Fulton St., #2, and Raphael Baron, 546 25th Ave., all of San Francisco, Calif. 94121

Filed Oct. 9, 1984, Ser. No. 658,811
Int. Cl.[4] F24J 3/02
U.S. Cl. 126—437 23 Claims



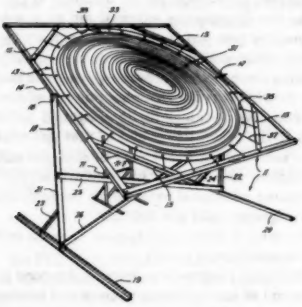
1. A portable solar water heater comprising:
a pair of solar collector panels,
a corresponding pair of rigid casings,
each panel being mounted in a respective casing,
each casing comprising a substantially flat, rigid panel, one side of which is substantially flat, its respective solar panel being joined to the other side of such panel,
means for joining said two panels together for transportation such that said solar panels are adjacent each other in a face-to-face relationship and such that said one sides of said panels face outward and away from each other, and
means for enclosing the side edges of said panels and their solar collector when said panels are joined together.

4,552,126

RADIATION CONCENTRATOR

John O. Boyd, 6611 Burkett St., Houston, Tex. 77021

Filed Apr. 10, 1984, Ser. No. 598,739
Int. Cl.[4] F24J 3/02
U.S. Cl. 126—451 15 Claims



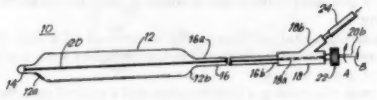
1. Radiation concentrator apparatus comprising:
a plurality of concentric sets of rings;
each ring set including a first ring and a second ring concentric therewith;
one side of each ring having a reflecting surface, and
support means positionable to support the rings in a certain position in which the reflecting surface of the second ring in each set is disposed to receive light reflected from the reflecting surface of the first ring in the respective set, incident on said reflecting surface of the first ring in the respective set in a parallel beam paraxial with the axis of the said rings, and to reflect such light to a common focus;
said common focus for all said ring sets being the same,
said support means when supporting said rings in said certain positions leaving paths between the second rings of the sets for such parallel light beams directed to the first rings of the sets and leaving paths between the first rings of the sets to said focus,
said support means including transparent material between the rings.

4,552,127

PERCUTANEOUS INTRA-AORTIC BALLOON HAVING AN EKG ELECTRODE AND A TWISTING STYLET FOR COUPLING THE EKG ELECTRODE TO MONITORING AND/OR PACING INSTRUMENTATION EXTERNAL TO THE BODY

Peter Schiff, Rte. 7, Cookeville, Tenn. 38501

Filed Apr. 1, 1983, Ser. No. 481,323
Int. Cl.[4] A61B 5/04; A61M 25/00
U.S. Cl. 128—1 D 21 Claims



1. An intra-aortic balloon assembly comprising:
an inflatable balloon formed of a nonstretchable plastic material and having a distal end terminating in a tip and having an open proximal end;
an elongated catheter tube having an open distal end communicating with and air-tightly joined to the open proximal end of said balloon, and having a proximal end for receiving positive and negative pressure pulses for selectively inflating and deflating said balloon;
a flexible elongated conductive stylet extending from said balloon distal end and through said balloon and said catheter tube and accessible at the proximal end of said catheter tube and being rotatable about its longitudinal axis to rotate said tip and said balloon to wrap said balloon about said stylet when rotated in a first direction and to unwrap said balloon from said stylet when rotated in the opposite direction;
said tip containing a conductive electrode, the distal end of said stylet being electrically connected to said electrode;
said tip including insulation means covering said electrode and having at least a portion thereof removed to expose a portion of the surface of said electrode;
means coupled to the proximal end of said stylet for coupling the electrical condition at said electrode to an output utilization device.

4,552,128

ELASTOMECHANICAL SPHINCTER

Terry M. Haber, 25011 Castlewood, Lake Forest, Calif. 92630

Filed Dec. 29, 1983, Ser. No. 566,486
Int. Cl.[4] A61B 19/00
U.S. Cl. 128—1 R 25 Claims

1. An elastomechanical sphincter comprising, in combination:
(1) an articulating structure formed from a resilient material with a spring-like memory and having a normally closed elongated occlusion orifice for surrounding a lumen,
(2) an elastic and manually manipulative pressure relief cuff extending outwardly from a peripheral portion of the articulating structure, said pressure relief cuff comprising a terminal end and an extensible neck portion extending between said terminal end and said articulating structure in a direction generally perpendicular to the direction of the lumen through said occlusion orifice, said pressure

relief cuff being implanted at a location within the body of the patient such that said terminal end thereof is manually accessible to the patient so as to be pulled away from said articulating structure in said generally perpendicular direction to stretch said neck portion and thereby and contort the shape of said articulating structure, so that said occlusion orifice opens and in turn, permits the lumen to

open, the relaxing of said neck portion resulting in the return of said orifice to the normally closed position to thereby close the lumen; and

(3) suture attachment means secured to spaced peripheral areas of said articulating structure and extending for connection to adjacent bone or muscle tissue in a patient to secure the articulating structure within the patient in a position surrounding the lumen.

4,552,129

ENDOSCOPE

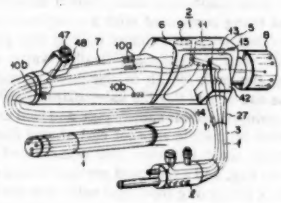
Mikio Utsugi, and Tathuya Yamaguchi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1983, Ser. No. 519,741

Claims priority, application Japan, Aug. 9, 1982, 57-138259; Aug. 19, 1982, 57-143682

Int. Cl.⁴ A61B *1/00*

U.S. Cl. 128—4 **7 Claims**



1. An endoscope comprising:

an operating mechanism;

a main body of an operation section holding said operating mechanism and having a base end and a protruded portioon extending in the opposite direction fron the base end; and

a casing within which said main body of the operation section is enclosed,

wherein said casing includes:

a hollow box-like casing body with one of its end portions serving to stabilize said base end of said main body of the operation section and its other end portion having an opening portion permitting said protruded portion of said main body of the operation section to be extended extrinsically of said casing; and

a cylindrical gripping cover having an end portion abutting against said other end portion of said casing body and covering said protruded portion of said main body of the operation section;

and wherein said main body of the operating section includes:

a fastening member connected to said protruded portion of said main body of the operation section and engaged with said gripping cover, whereby said fastening member acts to urge said gripping cover toward said casing body and, at the same time, to urge said casing body toward said gripping cover, thereby pressing said end portion of said gripping cover and said other end portion of said casing body against each other.

4,552,130

AIR AND LIQUID SUPPLYING DEVICE FOR ENDOSCOPES

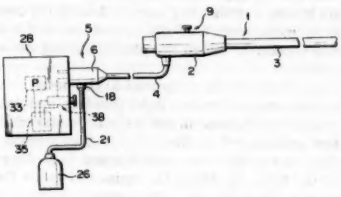
Kunio Kinoshita, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,428

Claims priority, application Japan, Mar. 1, 1983, 58-33574

Int. Cl.⁴ A61B *1/00*

U.S. Cl. 128—4 **11 Claims**



1. An air and liquid supplying device for an endoscope which includes an operating section, an insert section extending from the operating section, and a feed air passage and a feed liquid passage extending from the operating section to the distal end of the insert section, said device comprising;:

an air pump;

a first feed liquid tank containing a first liquid;

first switching means connected to the feed air passage and the feed liquid passage;

connecting means including an air supply passage connecting the pump and the first switching means, a pressurizing passage diverging from the air supply passage and communicating with the first feed liquid tank, and a liquid supply passage containing the first feed liquid tank and the first switching means, said first switching means being capable of being shifted between a first position where the air supply passage and the feed air passage are connected so that air from the pump is fed into the feed air passage, and a second position where the feed air passage is cut off and the liquid supply passage and the feed liquid passage are connected so that the first liquid is fed into the feed liquid passage;

a second feed liquid tank containing a second liquid and connected to the air supply passage between the pump and the pressurizing passage; and

second switching means connected to the air supply passage between the second feed liquid tank and the pressurizing passage, and adapted to switch the device to supply air to the air supply passage and to supply the second liquid to the air supply passage.

4,552,131

CO-VIEWING DEVICE FOR ENDOSCOPE

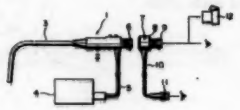
Yasuhiko Omagari, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

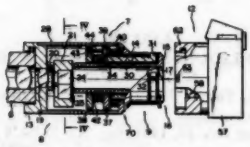
Filed Jun. 19, 1984, Ser. No. 622,189

Claims priority, application Japan, Jun. 24, 1983, 58-112640; Jun. 24, 1983, 58-112641; Jun. 24, 1983, 58-112642

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 **11 Claims**





1. A co-viewing device, which can be connected to the eyepiece section of an endoscope and to which a photographing device can be connected, comprising:

a body having a connecting portion detachably connected to the eyepiece section of the endoscope, and a main eyepiece section to which the photographing device can be attached;

a sub-eyepiece section connected to the body;

light guide means having light dividing and transmitting members and housed in the body to be movable between a first position where the light dividing member is on the optical axis of the beam, which is sent from the endoscope into the body, to divide the beam and guide the divided beams to the main- and sub-eyepiece sections, and a second position where the light transmitting member is on the optical axis to guide all of the beam to the main eyepiece section; and

changeover means arragned in the body to engage with the light guide means and to be engageable with the photographing device and serving to switch the light guide means to the second position, in accordance with the operation of attaching the photographing device to the main eyepiece section.

4,552,132

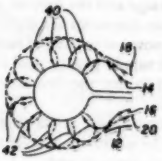
PULSATING HYDROTHERAPY SYSTEM

Harry G. Ruscigno, Orange, Calif., assignor to Advanced Medical Products, Inc., Sherman Oaks, Calif.

Filed Sep. 17, 1984, Ser. No. 650,690

Int. Cl.⁴ A61H *9/00*

U.S. Cl. 128—38 **7 Claims**



1. A pulsating hydrotherapy system for enhancing the flow of venous blood and lymphatic fluid comprising: a flexible cuff of a generally horseshoe configuration to be fitted over the limbs or cervix of a patient formed of a foam material; first and second tubular coils looped around the cuff, with the first coil positioned at one side of the cuff and with the other coil positioned at the other side of the cuff, the coils being positioned each to have a set of tubular segments adjacent the inner surface of the cuff in spaced parallel relationship parallel to the flow of venous blood of the patient; a source of two streams of pulsating fluid; and tubular leads coupling the source to the coils to introduce a first stream of pulsating fluid to one of the coils and a second stream of pulsating fluid to the other and to return both streams of pulsating fluid from the coils to the source, so that the pulsating fluid flows in a cardiocipetal direction only in said tubular segments.

4,552,133

RAPID EXHAUST VALVE FOR USE IN BLOOD CIRCULATION STIMULATOR

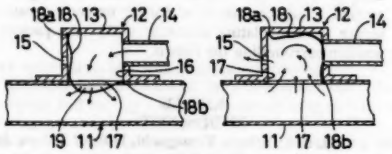
Mamoru Kawaguchi, Arita, Japan, assignor to Kawaei Co., Ltd., Arita, Japan

Filed Aug. 8, 1984, Ser. No. 638,715

Claims priority, application Japan, Aug. 18, 1983, 58-128286; Aug. 18, 1983, 58-128287

Int. Cl.⁴ A61H *23/04*

U.S. Cl. 128—44 **2 Claims**



1. A rapid exhaust valve for use in a blood circulation stimulator, in which the human body is subjected to repeated application and release of external pressure by means of an air bag and the like, characterized by that it comprises a valve box mounted so as to be communicated with said air bag and a flexible band valve diaphragm incorporated in said valve box, said valve box being connected with a compressed-air supply pipe and provided with an exhaust port at one portion of a circumferential wall thereof, said flexible valve diaphragm having almost the same width as the internal width of said valve box, one end of said flexible valve diaphragm being fixed between said compressed-air supply pipe and said exhaust port inside said valve box while another end of said flexible valve diaphragm being fixed between said compressed-air supply pipe and said air bag, and a reflected portion having a length of such a degree of projecting from said valve box into the inside of said air bag.

4,552,134

EQUIPMENT FOR DETERMINING THE POSITION OF A METAL BODY IN A MEDIUM WITH LOW ELECTRIC CONDUCTIVITY

Luc André M. G. Binard, Woluwe Saint Pierre, Belgium, assignor to Studiecentrum voor Kernenergie, S.C.K., Brussels, Belgium

Filed Jun. 10, 1983, Ser. No. 502,936

Claims priority, application Luxembourg, Jun. 17, 1982, 84209

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—1.5 **14 Claims**

1. An apparatus for determining the position of a metal body in a medium with low electric conductivity comprising:

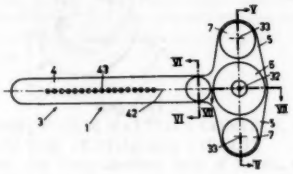
a support means,

a radiating self-induction coil mounted on said support means,

an A.C. current source,

a connecting means connecting the A.C. current source to the radiating self-induction coil, the radiation coil thus generating a radiation,

two receiving self-induction coils mounted on the support, the radiation of the radiation coil generating signals in the receiving coils, the radiation coil and the two receiving coils having parallel axes, the receiving coils being arranged symmetrically relative to the radiating coil, the radiating coil and the receiving coils having symmetry planes at right angle to said axes, said symmetry planes of



the receiving coils coinciding with one another and differing from said symmetry plane of the radiating coil to create an enclosure adapted to receive at least a portion of said medium which contains said metal body and in a space between the receiving coils and facing the radiating coil being free,

and

signaling means, the receiving coils being connected to the signaling means and controling said means according to a phase-shift of the signals generated in the receiving coils by the radiation from the radiating coil.

4,552,135

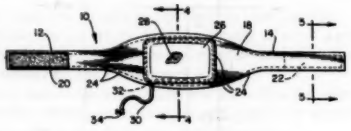
LUMBAR BELT

Gabor B. Racz, 4504 17th St., Lubbock, Tex. 79416, and Royce C. Lewis, Jr., 5233 W. 19th St., Lubbock, Tex. 79407

Filed Mar. 5, 1984, Ser. No. 586,438

Int. Cl.[4] A61F *5/02*

U.S. Cl. 128—78 **9 Claims**



1. A back support apparatus for supporting the small of one's back, said apparatus is an elongated, circumferentially extending belt which is adapted to be releasably placed about a person's trunk;

said belt apparatus includes a center panel connected to opposed elongated flexible end panels, the end panels have marginal free ends which terminate in a fastener means by which the opposed free ends can be fastened together and thereby girdle the trunk of a person;

said center panel is adapted to be placed at the small of one's back, and has an inside surface which can be brought to bear against a person's trunk, a variable cushion positioned on said inside surface, said cushion is of a size to be received within the small of one's back;

said cushion is in the form of an enclosure which forms a variable chamber, said variable chamber is connected to the atmosphere by a valve means; biasing means contained within said variable chamber for urging the variable chamber walls to expand outwardly and thereby fill the variable chamber with atmospheric air when said valve means is open.

4,552,136

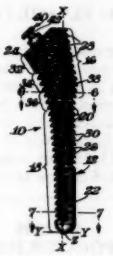
FEMORAL RASP

Robert V. Kenna, Saddle River, N.J., assignor to Howmedica, Inc., New York, N.Y.

Filed Oct. 19, 1983, Ser. No. 543,203

Int. Cl.[4] A61F *5/04, 17/32*

U.S. Cl. 128—92 E **16 Claims**



1. A femoral rasp for preparing an intramedullary canal for receiving the stem of a femoral hip prosthesis, the rasp comprising a body section with anterior, posterior, lateral and medial faces and generally divided into a wide proximal portion and a substantially longer narrow distal portion, the body section having a shape that general corresponds to the stem of the femoral hip prosthesis to be inserted into the prepared intramedullary canal; a plurality of spaced apart cutting teeth on selected portions of the outside surface of the body section for removing cancellous tissue and bone, the majority of the cutting teeth extending across each of the four faces of the body section; and a smooth surface on the lateral face of the body section at the free end of the distal portion for preventing violation of the lateral cortex upon insertion of the body section into the intramedullary canal.

4,552,137

EARPLUGS

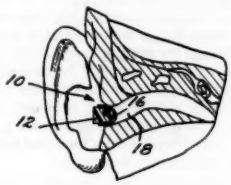
Richard H. Strauss, 1501 Doone Rd., Columbus, Ohio 43221

Filed Aug. 16, 1983, Ser. No. 523,422

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.[4] A61F *11/02*

U.S. Cl. 128—152 **6 Claims**



1. An earplug comprised of a preformed self-supporting body of resilient elastomeric material selected from the group consisting of foamed and unfoamed rubber and foamed and unfoamed synthetic plastics material, said body having a front face and a rear face, said front face having a generally convex forward surface adapted to conform to and cover the opening of the ear canal and a rearward surface and said body having a size such that it is adapted to reside within the external ear when said generally convex surface is positioned over the opening of the ear canal, and a layer of pressure sensitive adhesive on said generally convex surface for releasably adhering the body to the periphery of the ear canal opening.

4,552,138

DRESSING MATERIAL BASED ON A HYDROGEL, AND A PROCESS FOR ITS PRODUCTION

Wolfgang Hofeditz; Joachim Hornig, and Werner Karmann, all of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 8, 1983, Ser. No. 502,362

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224382

Int. Cl.⁴ A61L *15/01*

U.S. Cl. 128—156 **17 Claims**

1. A wound dressing material of at least one layer of a polymeric, hydrophilic gel and, where relevant, one or more layers of a carrier material as an intermediate and/or covering layer, wherein the gel comprises 40–50% by weight of a polyvinyl alcohol which is crosslinked and acetalized with formaldehyde and is water-insoluble to the extent of at least 90%, 15–30% by weight of water, and 15–45% by weight of one or more polyhydric alcohols with 2–6 carbon atoms.

4,552,139

NARCOTICS EVAPORATOR HAVING A MONITOR EQUIPPED BY-PASS

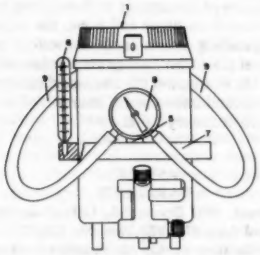
Ulrich Altner, Bad Segeberg; H. Wolfgang Falb, Krumesse, and Carl F. Wallroth, Lubeck, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 4, 1984, Ser. No. 596,584

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315943

Int. Cl.⁴ A61M *11/00*

U.S. Cl. 128—200.14 **3 Claims**



1. In a anaesthetics evaporator having an evaporating chamber with a flow into and out of the chamber, further including by-pass flow means conducted parallel to the interior flow around the exterior of the chamber, the improvement comprising an adapter mounted on the evaporator and having an inlet and an outlet passage for the gas to and from the interior of the chamber, a by-pass flow conduit connected from the inlet passage around the exterior of the chamber to the outlet passage, and including a differential pressure manometer connected in said conduit between said inlet passage and said outlet passage, and a thermometer mounted on said evaporator in heat contact relationship therewith.

4,552,140

EMERGENCY ESCAPE DEVICE

John J. Cowley, Toronto, Canada, and Selby D. Hussey, Vernon Hills, Ill., assignors to Erie Manufacturing Co., Milwaukee, Wis.

Filed Apr. 29, 1983, Ser. No. 490,034

Int. Cl.⁴ A62B *7/00*

U.S. Cl. 128—201.25 **14 Claims**

1. An emergency escape device, comprising:

an inflatable collar having a neck opening sufficiently large to fit over a user's head;

an annular reservoir for containing a supply of pressurized oxygen gas and concentrically positioned on said collar such that, when in use, said collar is located between said reservoir and a user's body so that when said collar is inflated the weight of said reservoir seals said collar around the user's head, said reservoir includes a housing containing a continuous double coil of tubing having an inner coil concentric with an outer coil;

a transparent impervious flexible hood adapted to surround a user's head and having an open end sealingly affixed to said collar around said reservoir and

control means associated with said reservoir and actuatable by the user for delivering oxygen from said reservoir to simultaneously fill said hood and inflate said collar.

4,552,141

ANESTHETIC RESPIRATORY SYSTEM

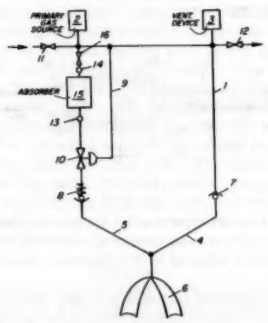
G. Torri, Milan, Italy, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,370

Claims priority, application European Pat. Off., Apr. 9, 1983, 83103470.7

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—205.12 **4 Claims**



1. An anesthesia system for inhalation narcoses which is switchable from partial or total rebreathing to non-rebreathing modes of operation, comprising a ring line connected to a patient outlet forming an inspiration gas branch and an expiration gas branch, one-way valve means in each said inspiratory and expiratory branches for directing gas flow from said inspiratory gas branch to said patient connection and from said patient connection to said expiratory gas branch, a controllable outlet valve mounted in said expiration gas branch downstream of said one-way valve means, a CO_2 absorber mounted in said expiration branch downstream of said outlet valve, said expiration branch having spaced apart connection points, said CO_2 absorber having an inlet and an outlet detachably mounted to said connection points, one connection point being

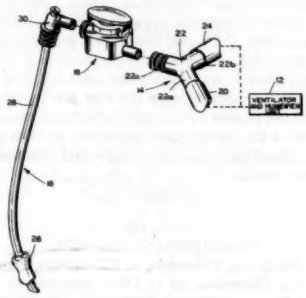
downstream of said absorber including a shut-off element including means positively actuated by the removal of said absorber from said ring line which thereby interrupts said ring line and establishes separate expiration and inspiration branches of said respiration line, said second point of connection of said absorber being opened upon removal of said absorber and being located upstream of said absorber and downstream of said controllable outlet valve, gas source means connected to said ring line downstream of said one connection point for providing an increased pressure in said ring line during an inspiratory phase and a decreased pressure during an exhalation phase, pressure relief valve means connected to said ring line downstream of said one connection point and means responsive to said increased pressure for closing said controllable outlet valve.

4,552,142

VENTILATOR SYSTEM HAVING A CONTROL VALVE IN THE VENTILATOR CIRCUIT

Allan Hoffman, and Harry Benford, both of Toledo, Ohio, assignors to Ohio Medical Research, Inc., Toledo, Ohio

Filed May 10, 1984, Ser. No. 608,704
Int. Cl.[4] A61M *25/00*
U.S. Cl. 128—207.16 **5 Claims**



1. A ventilator system comprising, in combination:
ventilator means for providing a supply of air at a predetermined pressure, said ventilator means including means for humidifying the pressurized air;
conduit means having an inlet and an outlet, the inlet of said conduit means connected to said ventilator means to receive the pressurized and humidified air;
tube means for introducing the pressurized and humidified air into a patient;
normally open valve means connected between said tube means and the outlet of said conduit means for providing a normally open flow path therebetween, said valve means operable to close the outlet of said conduit means.

4,552,143

REMOVABLE SWITCH ELECTROCAUTERY INSTRUMENTS

Edward A. Lottick, 789 Wyoming Ave., Kingston, Pa. 18704

Continuation-in-part of Ser. No. 242,746, Mar. 11, 1981, Pat. No. 4,370,980. This application Nov. 22, 1982, Ser. No. 443,517
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—303.14 **23 Claims**

1. An electrocautery instrument, comprising:
a conductive member adapted to come into contact with tissue for electrocauterization;
a handle on said conductive member enabling said conductive member to be positioned by surgical personnel;
means for electrically insulating said conductive member from said surgical personnel, said electrical insulating means including enabling means for enabling an electrical connection to said conductive member; and
switch means including at least one electrically conductive spring clamp member releasably attaching said switch means to said handle, said switch means having at least one releasable electrical connection to said conductive

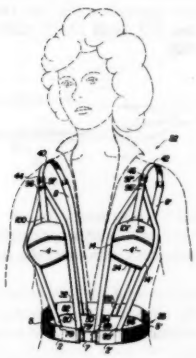
member via said spring clamp member and said enabling means, and said switch means including means for electrically connecting said spring clamp member to a source of electrical energy, whereby said switch means may be readily removed from and replaced on said electrocautery instrument.

4,552,144

BRASSIERE

Victor E. Selvaggi, 11855 NE. 19 Dr., N. Miami, Fla. 33181

Filed Jun. 11, 1984, Ser. No. 619,568
Int. Cl.[4] A41C *3/00*
U.S. Cl. 128—510 **4 Claims**



1. For use with a gown of the type having deep plunging neckline to meet at about the waistband of the garment,
an improved brassiere **22** comprising:
a first and second brassiere cup **4**, **4'** each having a pair of generally vertical side edges **14**, **14'** an a top and bottom edge,
a waistband **25** having a front portion **2**, **2'**, a rear portion **32**, and a first and second side portion **5**, **5'**, connecting the front and rear portions together; said waistband having a first and second end and fastening means **7** on said ends for mutual intercooperation to connect the same together to form said band, said fastening means being normally beneath and between said cups,
a first and second back strap, each having an upward end

and a lower end, the lower end of each being secured to the rear portion of said waistband at spaced locations with respect to one another and each location being substantially equispaced from the adjacent side portion,

a brassiere cup support means for each cup, each support means having,

a pair of straps extending substantially vertically from the side edge of the front portion of the waistband below said brassiere cup, and

a first and second generally upwardly extending strap from the top edge adjacent one of the side edges of the cup and converging to a distal end zone,

means on the distal end zone to attach to the upper end of the back strap.

4,552,145

NERVE IDENTIFICATION METHOD

Danny A. Riley, Brookfield, Wis., and James L. W. Bain, Sunnyvale, CA, assignors to The Medical College of Wisconsin, Milwaukee, Wis.

Filed Jun. 29, 1983, Ser. No. 508,854
Int. Cl.[4] A61N *5/00*
U.S. Cl. 128—630 **5 Claims**

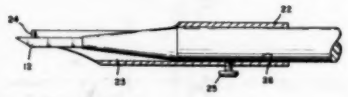
1. A method of identifying the matching nerve fascicles in proximal and distal nerve stumps for reanastomosis which comprises histochemically making a first visible image of the carbonic anhydrase emitted by one severed nerve end and a second visible image of the carbonic anhydrase emitted by the other severed nerve end and comparing the two images to identify which nerve fascicles should be rejoined.

4,552,146

DISPOSABLE OPHTHALMIC INSTRUMENT FOR PERFORMING RADIAL KERATOTOMY ON THE CORNEA

Ronald P. Jensen, and Arthur N. Allcroft, both of Glendale, Calif., assignors to Myocur, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 379,362, May 18, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,263
Int. Cl.[4] A61B *17/32*; B26B *29/00*
U.S. Cl. 128—305 **3 Claims**



1. An ophthalmic instrument for use in performing radial keratotomy on the cornea of a patient for correcting myopia and/or astigmatism of the patient, the ophthalmic instrument comprising:

a surgical blade having a suitable width for making an incision into the cornea of the patient;

an elongated handle to which the surgical blade is fixedly coupled; and

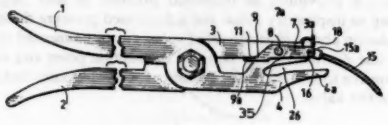
a depth-guide which is a hollow, cylindrical member slidably coupled to the elongated handle, the member having a pair of a protruding arms, each of which has a first end and a rounded second end and which extend parallel to each other and to the longitudinal axis of the hollow, cylindrical member from the first ends of the protruding arms for most of their length and then sharply converge adjacent, but not contiguous to the rounded second ends of the protruding arms, the second ends of the protruding arms being spaced apart a distance slightly greater than the width of the surgical blade whereby the rounded second ends of the protruding arms slidably rest on the surface of the cornea in order to control the incision depth of the surgical blade.

4,552,147

APPLICATOR FOR LIVESTOCK TAG

Michael S. Gardner, 108 Waiatarua Rd., Remuera, Auckland, New Zealand

Filed Aug. 30, 1983, Ser. No. 527,831
Claims priority, application New Zealand, May 16, 1983, 204234
Int. Cl.[4] A01K *11/00*
U.S. Cl. 128—330 **9 Claims**



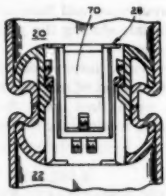
1. An applicator for a livestock tag, including at least two pivotally connected handle members, extending into or being attached to first and second jaws; pin mounting means being pivotally connected to a first jaw member; an elongate pin being pivotally connected adjacent to an end of said pin mounting means; a pin restraining housing being provided adjacent to an end of said first jaw member; spring biasing means connected between the pin mounting means and the first jaw member for normally urging at least an upper part of said pin to be located within said restraining housing for precluding pivotal movement of the pin; the second jaw member having actuating means for contacting the pin mounting means when the jaws are closed and causing the pin mounting means to pivot about its connection with the first jaw member against the action of the biasing means; such movement causing the pin to move out of the pin restraining housing to thus permit the pin to pivot about and relative to, its pivotal attachment to the pin mounting means.

4,552,148

ANASTOMOTIC DEVICE

Thomas G. Hardy, Jr., Columbus; A. L. Kaganov, Stamford, and W. G. Pace, Columbus, all of Ohio, assignors to American Cyanamid Company, Stamford, Conn., a part interest

Continuation of Ser. No. 287,500, Jul. 27, 1981, Pat. No. 4,467,804, which is a continuation-in-part of Ser. No. 198,448, Oct. 20, 1980, abandoned. This application Feb. 27, 1984, Ser. No. 583,956
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 C **11 Claims**



1. An anastomosis device for use in the surgical joining of the free ends of two tubular members to be anastomosed, said device comprising: a pair of identical ring members for securement to the free end of each of the tubular members to be anastomosed; at least one mating prong and one separate prong integral with and depending from each of said ring members, and prongs cooperatively mating with each other to form an annular coupling tube connecting said ring members; cooperatively connectable engaging pawls and locking slots formed in said separate and mating prongs enabling the securement of said ring members at first and second predetermined distances from each other whereby said tubular member free ends are

ultimately positioned contiguous to each other proximate said ring members and said engaged separate and mating prongs; suture means extending around each tubular member free end pulling and holding said free end proximate said ring member and said engaged and separate mating prongs forming said annular coupling tube, and contiguous to the other tubular member free end whereby said engaging pawls engage said locking slots and secure said ring members at a first predetermined distance from each other to enable the positioning of said tubular member free ends proximate said ring members and the placement of said purse-string suture there around and said engaging pawls engage said locking slots and secure said ring members at a second predetermined distance from each other when said ring members are moved toward each other to position said tubular member free ends contiguous to each other without penetrating the tubular member free ends and enable said free ends to grow together and approximate the inner, middle and outer surfaces of the tubular member without necrosis.

4,552,149

HEAD COOLING IMPLEMENT

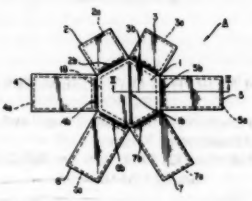
Tokuji Tatsuki, Osaka, Japan, assignor to Kabushiki Kaisha Dunlop Home Products, Kobe, Japan

Filed Mar. 30, 1983, Ser. No. 480,300

Claims priority, application Japan, Nov. 19, 1982, 57-176345[U]; Jan. 17, 1983, 58-5249[U]

Int. Cl.⁴ A61F *7/00*

U.S. Cl. 128—402 **9 Claims**



1. A head cooling implement comrising:

a main body consisting of a first cooling piece for covering the top of the head and a plurality of other cooling pieces radially arranged around said first cooling piece and positioned for covering the front, sides and back of the head, each said cooling piece comprising a sealed bag containing a coolant;

a first stretchable belt means adapted to be applied over the top of the head and under the chin so as to bring said head top cooling piece of said main body into close contact with the top of the head;

a second stretchable belt means adapted to bring said other cooling pieces of said main body into close contact with the skull at suitable places therearound; and

a heat insulating cap which covers said main body.

4,552,150

METHOD AND APPARATUS TO ASSIST CARDIAC MUSCLE FUNCTIONING

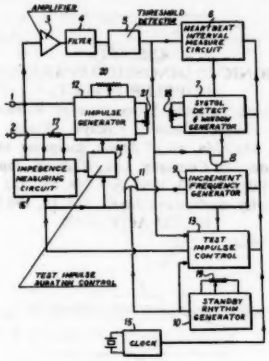
Fred Zacouto, 16 rue de la Convention, 75015 Paris, France

Filed Jun. 14, 1983, Ser. No. 504,170

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **23 Claims**

1. A process for aiding the operation of the heart muscle comprising sensing the heart cycles of the heart, automatically and periodically sending to the heart muscle at a moment before the expected end of a heart cycle, electrical sub-threshold test impulses of a value insufficient to normally produce an electro-systole so long as the heart threshold is greater than a predetermined value, but sufficient to produce an electro-systole if the physiological state of the heart muscle has charged and decreased to a threshold below said predetermined value, and detecting the occurence or non-occurence of this electro-



systole during a limited time window consecutive to the impulse and ending before the expected end of said heart cycle.

4,552,151

PROCESS AND MEANS FOR RAPID POINT BY POINT SURVEY OF BODY SCANNING RADIATION FIELD

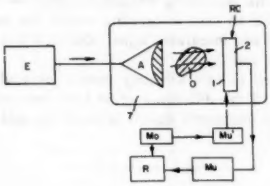
Jean-Charles Bolomey, Sceaux, and Yves Michel, Massy, both of France, assignors to Centre National de la Recherche Scientifique, Paris and Societe d'Etude du Radant, Les Ulis, both of, France

Continuation-in-part of Ser. No. 394,986, Jul. 2, 1982,. This application Dec. 5, 1984, Ser. No. 677,897

Claims priority, application France, Jul. 2, 1981, 81 13005

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—653 **5 Claims**



1. A system for rapid and point by point survey of a UHF radiation field having passed through a body, the system comprising:

an antenna for transmitting UHF radiation to the body undergoing scanning;

a stack of waveguides having coplanar apertures and positioned in radiation alignment with the antenna and at a distance therefrom sufficient for location of the body between the antenna and the stack, adjacent individual waveguides being spaced at a distance less than one wavelength;

a panel having a plurality of parallel alternating columns of conductors and serially connected diodes biased in the same direction, adjacent diode columns being less than one wavelength apart;

the columns being positioned parallel to the component of a radiation field vector to be measured;

means for reverse biasing all of the diode columns except a single selected forward biased diode column thereby polarizing the selected diode column to impinging radiation;

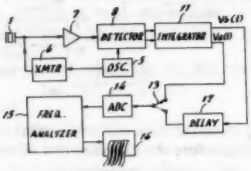
means for producing a signal in relation to the electromagnetic field at the orthogonal crossing of a selected column

in the panel and a selected row in the stack of waveguides, which corresponds to a scanned point which is in registry with the orthogonal crossing.

4,552,152
ULTRASONIC DIAGNOSTIC APPARATUS USING DOPPLER EFFECT

Ryobun Tachita; Tsutomu Yano, both of Kawasaki; Hiroshi Fukukita, Tokyo; Kuniaki Fukaya, Atsugi, and Akira Fukumoto, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Kadoma, Japan

Filed Jul. 13, 1983, Ser. No. 513,323
Claims priority, application Japan, Jul. 14, 1982, 57-122553
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **9 Claims**



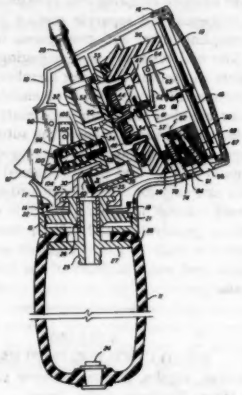
1. An ultrasonic diagnostic apparatus comprising:
an ultrasonic diagnostic probe means for transmitting and receiving ultrasonic pulse signals;
detector means coupled to said ultrasonic diagnostic probe means for detecting phases of signals received by said ultrasonic diagnostic probe means and for producing output signals indicative of said phases;
means coupled to said detector means for integrating said phase indicative signals during a timing period corresponding to one of transmitting and receiving timing of respective said ultrasonic pulse signals by said probe means and for producing integrated signals as output;
means coupled to said integrating means for selecting a plurality of said integrated signals during a said period of integration; and
means coupled to said selecting means for analyzing the frequency of the difference of at least one pair of said plurality of integrated signals selected by said selecting means.

4,552,153
PRESSURE GAUGE

Richard W. Newman; John D. Connors, both of Auburn; Andrew J. Kugler, Camillus, all of N.Y., and Herbert H. Loeffler, Arlington, Mass., assignors to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Nov. 17, 1983, Ser. No. 552,693
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—677 **24 Claims**

1. A fluid pressure measuring device comprising a housing; means connected to the housing for admitting fluid into the housing; a gauge on the housing which indicates the pressure of the fluid, the gauge having a dial and coacting needle; and means responsive to the fluid pressure in the housing for imparting rotational movement to the needle relative to the dial, the last-named means including a piston that is movable linearly in the housing by the fluid pressure, a leaf spring having a free end and an end fixed to the housing, the free end of the leaf spring being operatively engaged by the piston whereby linear movement of the piston causes arcuate movement of the leaf spring free end, means in the housing interconnecting the free end of the leaf spring and the gauge needle whereby the arcuate movement of the spring free end causes the needle to rotate, and movable fulcrum means engaging the leaf spring

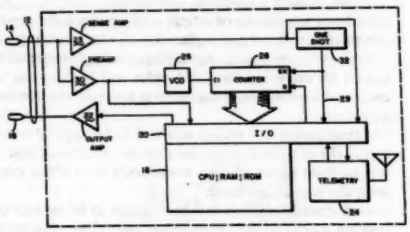


adjacent its fixed end for controlling the spring rate of the leaf spring and zero position of the gauge needle relative to the dial.

4,552,154
WAVEFORM MORPHOLOGY DISCRIMINATOR AND METHOD

Jerome T. Hartlaub, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 12, 1984, Ser. No. 588,277
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—702 **4 Claims**



1. Apparatus for comparing intracardiac depolarization waveforms comprising:
means adapted to be coupled to the ventricle of a patient's heart for generating a logic level ventricular sense signal in response to a ventricular depolarization;
means responsive to said sense signal for defining a count window signal;
means for counting a clock signal, responsively enabled by said count window signal, for generating a count index;
means for generating said clock signal, said clock signal having a frequency proportional to the instantaneous value of said ventricular depolarization;
means for defining and storing a reference index; and
means coupled to said means for counting for comparing the value of said count index with said reference index, to discriminate between depolarization waveforms.

4,552,155

DIAGNOSTIC SPECIMEN COLLECTOR

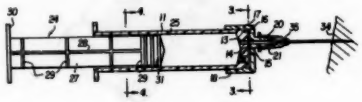
Roger F. Etherington, Newport Beach, and Clayton L. Ester, Sepulveda, both of Calif., assignors to Transmed Corporation, San Diego, Calif.

Division of Ser. No. 35,728, May 3, 1979, Pat. No. 4,320,770. This application Mar. 22, 1982, Ser. No. 360,438

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.[4] A61B *5/14, 10/00*

U.S. Cl. 128—766 **7 Claims**



1. A diagnostic specimen collector consisting of:

an elongated hollow body open at one end and closed at the opposite end with a single orifice in said closed end;

a plunger having sealing means on one end which is slidably inserted into, and in sealing relationship with, said body to vary the interior volume of said body;

a closure for said closed end orifice consisting of a one-piece cap having an end wall with a skirt extension exteriorly mounted to encompass said closed end concentrically and rotatable thereabout and a nipple to receive compatible fittings of specimen taking medical devices extending outwardly from the outer surface of said end wall and an orifice in said closure passing axially through said nipple and said end wall, said closure being rotatable from a first position in which both orifices are out of communication and said closed end orifice is in a sealed condition to a second position in which both orifices are in sealed communication for the passage of a specimen upon movement of said plunger and back to said first position after passage of said specimen; and sealing means for the closed end orifice comprising an O-ring positioned concentrically with reference to said closed end orifice in an annular groove on an outer surface of said closed end, a portion of said O-ring extending above said closed end outer surface to create a friction-free space between said outer surface and a inner surface of said closure except for a moving area of sealing contact between said ring portion and the inner surface of the closure, said ring portion providing a bearing surface for said rotation of said closure and an agent for application to said specimen in the interior of said hollow body.

4,552,156

EXERCISE S-T SEGMENT EVALUATOR

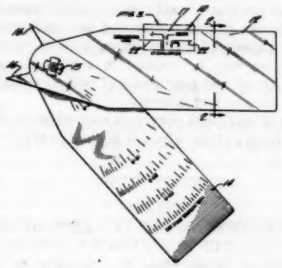
Frank W. Jackson, Twillingate, R.D. 3, Mechanicsburg, Pa. 17055, assignor to Frank W. Jackson, Mechanicsburg, Pa.

Filed Jun. 24, 1983, Ser. No. 507,392

Int. Cl.[4] A61B *5/02*

U.S. Cl. 128—703 **7 Claims**

1. An overlay device for use with an electrocardiogram to evaluate the normalcy of the S-T segment in an exercise test program, comprising: a transparent overlay base sized to be placed over the electrocardiogram; a reference line on said base positionable to overlay the isoelectric line of said electrocardiogram; a J-point line on said base perpendicularly crossing said reference line, said J-point line being positionable to overlay a J-point on said electrocardiogram; a first point mark on said base locating a point 0.08 seconds after said J-point line and one mm below said reference line; and a second point mark on said base directly below said first mark and locating a point 0.08 seconds after said J-point line and two mm below said reference line; whereby the location of the S-T segment with



respect to the first and second point marks describes the normalcy of the S-T segment.

4,552,157

OPEN CURVE, ATRIAL "J" ELECTRODE

Philip O. Littleford, 2400 Bedford Rd., Orlando, Fla. 32803

Continuation-in-part of Ser. No. 168,742, Jul. 14, 1980, Pat. No. 4,357,947, and Ser. No. 231,103, Feb. 3, 1981, Pat. No. 4,401,127. This application Jun. 17, 1982, Ser. No. 389,170

Int. Cl.[4] A61N *1/04*

U.S. Cl. 128—786 **4 Claims**

1. A pacing electrode for insertion through a puncture wound and through the circulatory system into a patient's heart, said electrode comprising

(a) a flexible conductor having an outer insulating sheath, said sheath and conductor including an oblong body portion, a distal portion and a proximal end, said distal portion extending in a direction away from the axial direction of said body portion, said distal portion having sufficient flexibility and elastic memory so as to be straightened for passage through the patient's circulatory system and for reforming the extension in said direction after passage into the patient's heart;

(b) a conductive terminal at the end of said distal portion of said conductor for electrical connection within the heart;

(c) means along said body portion at said proximal end of said conductor for indicating said direction of said distal portion;

(d) means adjacent said proximal end of said sheath for interconnection to a pacemaker pulse generator, said

indicating means including a wing joined to said sheath adjacent said proximal end, said wind extending away from said conductor in a fixed relation to the direction of said distal portion;

(e) said distal portion of said conductor is inserted into the heart with the proximal end and said indicating means extending outside of said puncture wound, whereby said distal portion may be located in a desired position by manipulation of said proximal end with reference to said indicating means; and wherein

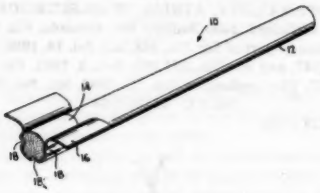
(f) the plane of said distal portion is rotated between 20° and 50° away from a plane which is normal to the direction of said wings.

4,552,158

FREE AIR DILUTION SMOKE FILTER AND METHOD AND APPARATUS FOR FABRICATING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 333,815, Dec. 23, 1981, Pat. No. 4,499,912.
This application Oct. 3, 1984, Ser. No. 657,264
Int. Cl.[4] A24C *5/52*; A24D *3/02*
U.S. Cl. 131—94 **3 Claims**



1. A method for making filtered cigarettes comprising the steps of:

providing a filtering material including a multiplicity of fibrous members;

defining an elongated bonded zone;

continuously feeding said filtering material through said bonding zone;

feeding a bond activating agent into contact with said filtering material in said bonding zone to bond said fibrous members to each other at spaced contact points to form an elongated, smoke-permeable filter rod defining a tortuous path for passage of smoke therethrough;

joining said filter rod in end-to-end relation with a tobacco rod by wrapping the entire filter rod member and an adjacent portion of the tobacco rod with smoke-impervious tipping material so as to juxtapose portions of the inner surface of the smoke-impervious tipping material with the exterior surface of the rod member to form sealed areas precluding passage of smoke thereacross; and

forming longitudinally continuous grooves in the form of circumferentially spaced recesses in said filter rod and said tipping material throughout a portion of the length of said filter rod extending from an end of said filter rod remote from said tobacco end.

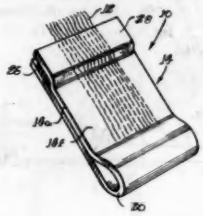
4,552,159

APPARATUS FOR TREATING HAIR

Vittorio E. Fabbri, 8411 Crystal Springs Rd., Woodstock, Ill. 60098, and Jackie D. Bell, 1596 Bedlington Dr., Barrington, Ill. 60010

Filed Jun. 21, 1983, Ser. No. 506,441
Int. Cl.[4] A45D *7/00, 8/00*
U.S. Cl. 132—9 **7 Claims**

1. A hair treating device comprising a first pliable liquid impermeable sheet adapted to be placed in underlying relation to selected strands of hair during application of a hair treating substance to the selected strands, said first sheet being of sufficient lateral width to extend laterally outwardly from opposite sides of the selected strands, and a second pliable liquid impermeable sheet of substantially similar lateral width as said first sheet and of sufficient length to substantially overlie said first sheet in juxtaposed generally full surface contact when placed thereagainst with said selected strands between said first and second sheets, said first and second sheets having discrete



domains of alternating magnetic polarity defined throughout substantially their full surface areas operative to releasably maintain said sheets in selectively placed juxtaposed relation through magnetic attraction therebetween and establish a liquid seal about substantially the full periphery of said selected strands after application of said treating materials.

4,552,160

ATTACHING AN ARTIFICIAL NAIL

Gloria D. Griggs, Dallas, Tex., assignor to Tip-N-Wrap, Inc., Dallas, Tex.

Continuation of Ser. No. 454,436, Dec. 29, 1982, abandoned.
This application Dec. 3, 1984, Ser. No. 677,319
Int. Cl.[4] A45D *29/00*
U.S. Cl. 132—73 **9 Claims**

1. A method of applying an artificial nail to a natural nail, comprising the steps of:

(a) attaching the artificial nail to a natural nail using a liquid adhesive material;

(b) buffing the surfaces of the artificial nail and the natural nail until the surface of the artificial nail is substantially flush with that of the natural nail;

(c) placing a precut layer of non-woven, randomly intermingled cellulose fibers over substantially the entire surfaces of the natural and artificial nails without contacting the cuticle of the natural nail, said fibers being oriented substantially along the major axis of the respective surfaces of the natural and artificial nail;

(d) applying the adhesive material to the fibers until said fibers are substantially saturated and allowing the adhesive material to dry such that the fibers become essentially invisible; and,

(e) buffing the surfaces of the natural and artificial nails until said surfaces are substantially smooth.

4,552,161

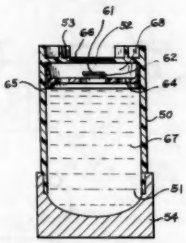
STICK ANTIPERSPIRANT PACKAGE AND PROCESS

John H. Hill, Edison, and Luis S. Lisboa, Newark, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 16, 1983, Ser. No. 532,876
Int. Cl.[4] A45D *40/30*
U.S. Cl. 132—88.5 **7 Claims**

1. A twist-up type container intended to hold and dispense a

solid, wax-like stick product; said container comprising in combination a housing for said proudct, a following, and a threaded spindle having a latch collar threaded thereon; said housing being open at the top and closed at the base except for an opening substantially at the center of said base, said base opening being sufficiently large for said latch collar to pass through, said follower being positioned in said housing and having an opening substantially at the center thereof larger than said threaded spindle and in substantial registration with



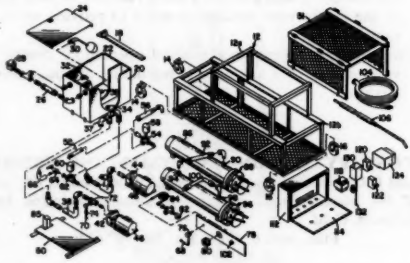
said base opening; said follower further having means to lock it to said latch collar when said spindle is inserted into said housing through said basing opening thereof; said spindle further having means to lock it rotatably in said base opening; whereby said container may be filled with molten product through said base opening and elevator opening, and said spindle maybe inserted and locked to said follower after said container is filled, after which said molten product solidifies in said housing.

4,552,162

ELECTRIC COMBINATION CLEANER

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed May 26, 1983, Ser. No. 498,457
Int. Cl.[4] F16K *49/00*
U.S. Cl. 134—57 R **4 Claims**



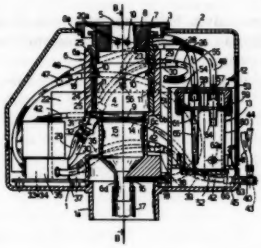
4. A pressure cleaning system, which comprises:
a frame;
wheels for supporting said frame for movement;
a supply tank mounted on said frame, said tank having an inlet and an outlet;
a float valve connected to the inlet of said tank;
a flow sensor connected to the inlet of said tank;
a pump mounted on said frame at a level substantially even with the outlet of said tank, said pump having an inlet and an outlet;
an electric motor drivingiy connected to said pump;
a removable shroud enclosing pump and said motor;
a U-shaped conduit interconnecting the outlet of said tank and inlet of said pump;
an elongate, closed electric heater tank mounted on said frame below said pump, said heater tank including an inlet and an outlet positioned in spaced-apart relationship at opposite ends on the upper side of said tank;
an insulating jacket surrounding said electric heater tank;
means for interconnecting the inlet of said heater tank and the outlet of said pump;
a temperature sensor associated with said heater tank;
means defining a discharge outlet connected to the outlet of said heater tank;
a spray wand adapted for connection to said discharge outlet means;
a closed box with an openable front panel mounted on the other end of said frame opposite said supply tank; and
control means within said box and including sealed switches on the panel responsive to said flow and temperature sensors for controlling operation of said pump and heater tank in accordance with predetermined flow and temperature conditions in the system so that sufficient priming is maintained to avoid overheating and premature burnout of said heater tank.

4,552,163

CLEANING DEVICE FOR DENTAL INSTRUMENTS TO BE USED DURING SURGERY AND DENTAL TREATMENTS

Carlo Biancalana, Perugia; Giuseppe Vescovi, Pregassona, and Maurizio Volpini, Varese, all of Italy, assignors to Bitiess Microtecnica S.A., Switzerland

Filed Aug. 3, 1983, Ser. No. 519,907
Int. Cl.[4] B08B *3/00*
U.S. Cl. 134—100 **7 Claims**



1. A device for cleaning, disinfecting and drying dental instruments, comprising:
a box-like container, in the upper part of which an entrance orifice is located;
a tubular body mounted below the entrance orifice, said body having a body orifice coaxial to the entrance orifice;
said body defining with its interior surfaces a substantially cylindrical treatment chamber;
a removable grate located at the bottom of the chamber;
a first series of nozzles dispensing a mixture of pressurized air and water into the chamber;
an atomizer unit for producing atomized disinfectant;
beneath the first series of nozzles is located a second series of nozzles which supply air mixed with the atomized disinfectant, the disinfectant being supplied by an airtight disposable cylinder;
said tubular body comprising a plurality of tubular coaxial members inserted one in the other, so that they can be disassembled;
wherein the outermost of said coaxial members comprises a first section substantially of the same length as the chamber and in which there is a second of said coaxial tubular members upon which is a third of said coaxial tubular members which has an opening that delimits the body orifice which is to be used for inserting the instruments into the chamber;

the outermost and second coaxial members having facing surfaces which form together a first manifold for receiving the mixture of pressurized air and water, which is dispensed through the first series of nozzles which extend through the second tubular coaxial member;

said facing surfaces also forming a coaxial manifold which receives the disinfectant mixed with air which is dispensed through the second series of nozzles which pass through the second coaxial tubular member;

a pair of sensing elements which produce photoelectric screening rays are mounted in the second tubular coaxial member adjacent openings in the third coaxial tubular member;

the rays form a barrier screen in the body orifice for detecting the presence of dental instruments;

a programming-timing unit being connected to and activated by said sensing elements;

the removable grate being located on a seat formed in said outermost tubular member;

a lower section of said outermost tubular member forms a waste pipe;

an air nozzle dispenses pressurized air into the waste pipe in the same direction in which the mixture flows from the chamber;

first supply pipes being connected to the first series of nozzles for supplying water and air to the nozzles;

first electro-valves for controlling the first supply pipes;

a second supply pipe for supplying pressurized air to the atomizer unit;

a second electro-valve for controlling the second supply pipe;

the electro-valves being normally closed and are opened according to a predetermined time and duration sequence by the programming unit.

4,552,164

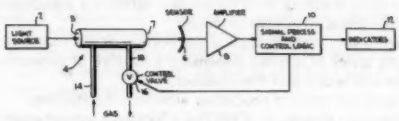
DETECTION METHOD AND APPARATUS

Tony Urella, R.D. #2, Bernville, Pa. 19506

Filed Jul. 31, 1981, Ser. No. 288,747

Int. Cl.[4] A62B *7/02*

U.S. Cl. 137—2 **12 Claims**



1. An apparatus for use with a system for administration of anesthetics comprising predominantly a mixture of anesthetic gas and oxygen-containing gases, said apparatus comprising a sensor for detecting the presence of anesthetic gas in an oxygen or oxygen-containing gas delivery line prior to mixing said oxygen or oxygen-containing gas with the said anesthetic gas; said sensor being capable of developing a signal upon detection of said anesthetic gas in said oxygen or oxygen-containing gas delivery line, and means responsive to the signal developed for indicating the presence of said anesthetic gas in said oxygen or oxygen-containing gas delivery line which activates a warning or shuts off the oxygen or oxygen-containing gas delivery line.

4,552,165

METHOD AND DEVICE FOR MAINTAINING DENSITY OF A PRINTED COLOR CONSTANT

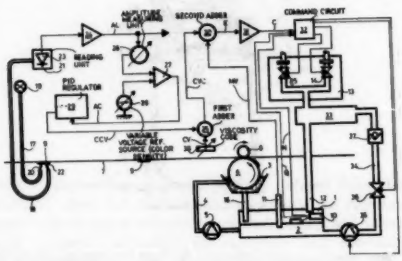
Zdenek Luska, Apples, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Jun. 20, 1984, Ser. No. 622,673

Claims priority, application Switzerland, Jun. 21, 1983, 3387/83

Int. Cl.[4] B41F *31/00*

U.S. Cl. 137—3 **8 Claims**



1. A method for keeping constant density of a printed color on a medium, comprising the steps of:

receiving light rays reflected by a printed mark on the medium;

transmitting the reflected light rays to a photodiode to generate a signal corresponding to their intensity and thus representative of the density of the printed color;

measuring an amplitude of the signals and comparing a resulting measured value with a reference value to provide a correction signal;

combining the correction signal with a viscosity code signal indicating a viscosity code of an ink/solvent mixture used for printing on the medium in order to generate a corrected viscosity code signal;

combining the corrected viscosity code signal with a viscosity measuring signal derived from viscosity measurement of the ink/solvent mixture in order to provide an error signal; and

using the error signal to command opening or closing of valve means of a mixture for regulating the ink/solvent mixture.

4,552,166

SECONDARY CONTAINMENT SYSTEM AND METHOD

Daniel I. Chadbourne, Sr., and Daniel I. Chadbourne, Jr., both of San Mateo, Calif., assignors to DC Technologies, Inc., Oakland, Calif.

Filed Apr. 6, 1984, Ser. No. 597,614

Int. Cl.[4] F16K *43/00*

U.S. Cl. 137—15 **18 Claims**

17. A method for retrofitting a rigid storage vessel to provide secondary containment, comprising the following steps:

forming a manhole opening in the rigid vessel;

inspecting the rigid vessel;

repairing the rigid vessel as necessary;

placing a flexible cell inner vessel through the manhole opening and into the rigid outer vessel, the inner vessel sized to generally conform to at least a portion of the interior of the rigid vessel when inflated;

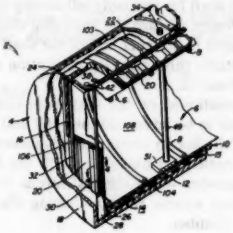
inflating the inner vessel;

securing a portion of the inner vessel, which surrounds an opening in the inner vessel, to the rigid vessel with the inner vessel opening and manhole opening being aligned;

mounting a plurality of inner vessel positioning members within the interior region so the inner vessel substantially fills the interior of the rigid vessel;

mounting an inner cover to the inner vessel opening to seal the interior of the inner vessel; and

mounting a manhole cover over the manhole opening to seal the interior of the rigid vessel so that true secondary



containment is achieved whereby the rigid and inner vessels defining a region therebetween so providing access to said region through said manhole opening providing no access to the interior of said inner vessel.

4,552,167

METHOD OF AND DEVICE FOR CLEANING HOLLOW SPACES IN DOUBLE SEAT VALVES

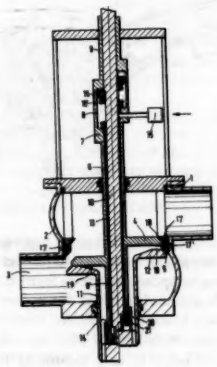
Wolfgang Bräkelmann, Unna-Uelzen, Fed. Rep. of Germany, assignor to Holstein & Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,467

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211692

Int. Cl.[4] B08B *3/02, 9/02*

U.S. Cl. 137—15 **5 Claims**



1. A method of cleaning double seat valves of the type having two axially movable valve bodies defining an annular leakage space therebetween, and an annular leakage discharge conduit communicating with the leakage space, comprising the steps of ejecting at least three discrete jets of cleaning liquid along an inside wall of the discharge conduit, then bending each jet radially outwardly along the annular wall of the leakage space and spreading each jet into a sector on the periphery of the annular leakage space while mixing the liquid in adjoining sectors, then returning the mixed liquid from the periphery along the opposite wall of the leakage space and discharging the liquid along the opposite wall of the discharge conduit.

4,552,168

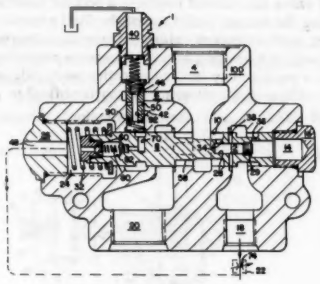
STABILIZER FOR PRIORITY FLOW DIVIDER VALVE

Probir K. Chatterjea, Mount Prospect, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed May 15, 1984, Ser. No. 610,894

Int. Cl.[4] G05D *11/03*

U.S. Cl. 137—101 **21 Claims**



1. A priority flow divider valve for use with a primary demand control valve comprising:

a housing means including a first inlet, a first outlet for fluid communication with the primary demand valve, a second outlet, a bypass passage having fluid communication with said first inlet, a first bore and a second bore;

a supply valve spool biased within said first bore providing selective fluid communication between said first inlet and said first and second outlets;

means for fluid communication from the demand valve to said second bore;

means for preventing fluid communication from said second bore to the demand valve;

a bypass valve spool mounted within said second bore biased to prevent fluid commuication between said bypass passage and said second bore, said bypass valve spool allowing fluid communication between said bypass passage and said second bore during fluid communication from the demand valve to said second bore; and

means for retarding displacement of said bypass valve spool from a position allowing fluid communication between said bypass passage and said second bore to a position preventing fluid communication between said bypass passage and said second bore.

4,552,169

DEVICE FOR REGULATING THE PRESSURE OF A FLUID SUPPLIED TO A FEEDING CIRCUIT FROM A FLUID SOURCE

André Ecomard, Marly le Roi, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 226,983, Jan. 21, 1981, Pat. No. 4,418,535. This application Sep. 20, 1983, Ser. No. 533,900

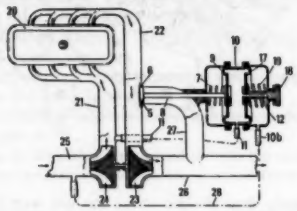
Claims priority, application France, Jan. 21, 1980, 80 01370

Int. Cl.[4] G05D *11/00;* **F02B** *37/00*

U.S. Cl. 137—115 **6 Claims**

1. In a device for regulating fluid pressure in a utilization circuit having an inlet pipe means and an outlet pipe means, and fed with a fluid under pressure by a fluid source, the device comprising a by-pass fluid conduit connected parallel to said outlet pipe means of said utilization circuit, obturating means adapted for obturating said by-pass conduit, and control means for automatically moving said obturating means in a closed position when the pressure in the utilization circuit is lower than a predetermined value, the improvement wherein said control means comprises a pressure controller connected to said fluid pressure source through a first calibrated aperture and, said pressure controller having a first movable wall and a

second movable wall therein to define a fluid pressure receiving chamber therebetween with an outlet opening on the other side of the second movable wall, calibrated first spring means on said first movable wall, with said obturating means comprising a valve with a valve stem connected to said first movable wall with the first spring means disposed for urging said first movable wall toward said second movable wall and for moving said valve into closed position; a second calibrated spring for urging the second wall toward the fluid pressure receiving chamber, and a second calibrated aperture carried by said second wall and opening into said pressure receiving chamber and into a passageway leading into the other side of said second movable wall for allowing pressurized fluid to pass there-



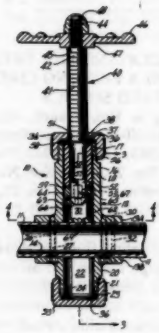
through from the fluid pressure receiving chamber to the outlet opening, and passageway means juxtaposed with said passageway for closing off passage of fluid through said passageway when the pressure in said pressure receiving chamber increases to a level sufficient to displace said second movable wall a distance sufficient to close said passageway, whereby as the fluid pressure in said utilization circuit increases, an initial displacement of said second movable wall closes said passageway, which causes a sudden rise in pressure in the fluid pressure receiving chamber so as to cause a full opening of the valve to thereby lower the pressure against the bias of said first spring means in the utilization circuit by diverting a partial flow through said by-pass conduit.

4,552,170

LINE INSERTABLE VALVE

David L. Margrave, 928 Buena Vista, South Pasadena, Calif. 91030

Filed Sep. 14, 1984, Ser. No. 650,822
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—318 **15 Claims**



1. A valve for insertion in an elongated fluid line, comprising:

a valve body having an opening therethrough to receive the line, the body being configured for fitting over and being sealingly attached to the line, the body defining a bore extending laterally from one side of the line opening, and a receiving chamber extending laterally from the line opening and diametrically opposed to the bore, the body including first and second closures secured thereto to close the bore and receiving chamber respectively;

a shaft extending through the first closure into the bore;

means on the shaft for rotatably advancing the shaft through the first closure toward the receiving chamber;

a cutter secured to an inner end of the shaft and configured to cut rotatably through at least a portion of the line as the shaft is advanced; and

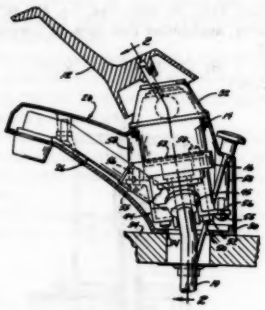
seal means positioned on the shaft between the cutter and first closure to be advanced into and seal against the cut portion of the line by continued advancement of the shaft when the cutter has passed through the line into the receiving chamber when the seal means or the cutter engages a stop means, thereby sealing the line from the receiving chamber.

4,552,171

SUPPLY CONDUIT MOUNTING ASSEMBLY FOR SINGLE LEVER FAUCET

Gerald J. Farrell, Elmhurst, and Rudy Y. Bisonaya, Oaklawn, both of Ill., assignors to Elkay Manufacturing Company, Broadview, Ill.

Filed Apr. 22, 1983, Ser. No. 487,823
Int. Cl.[4] F16L *5/00*
U.S. Cl. 137—359 **7 Claims**



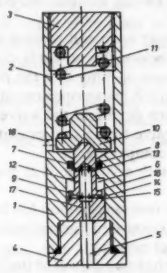
1. A single lever faucet adapted to be supplied by spaced hot and cold water supply conduits, said faucet comprising an escutcheon having support members formed on the interior thereof, a valve body having bores for receiving water from the ends of said water supply conduits, a mounting plate fastened to said support members of said escutcheon, means for securing said valve body to said mounting plate, said valve body providing first sealing surfaces adjacent the bores therein, said ends of said conduits being flared outwardly and forming inside surfaces providing second sealing surfaces facing said first sealing surfaces, said mounting plate having portions engaging sections of said water supply conduits adjacent said flared ends and mechanically gripping said sections to hold said flared ends of said supply conduits adjacent said valve body with the insides of said supply conduits connected to said valve body bores to provide continuous waterways, and sealing means including sealing elements between said first and second sealing surfaces adjacent the junction of said supply conduits and said valve body bores to seal said waterways from said mounting plate to prevent contact thereof with water in said waterways.

4,552,172

PRESSURE-LIMITING HYDRAULIC VALVE

Karl Krieger, Wuppertal, and Werner Reinelt, Bochum, both of Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,457
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245667
Int. Cl.[4] F16K *17/34*
U.S. Cl. 137—484.6 1 Claim



1. A pressure-limiting valve for hydraulic fluids subjected to high pressure, which valve comprises

(a) a valve housing having a stepped bore therein providing a first bore portion of smaller diameter leading directly into a second bore portion of larger diameter with an annular step between the two portions;

(b) a stepped switching piston arranged for axial displacement in said bore between a valve-open position and a valve-closed position, said piston having a first portion of smaller diameter for movement in said smaller-diameter bore portion and a second portion of larger diameter, divided by an annular step from said first piston portion, for movement in said larger-diameter bore portion;

(c) an inflow duct leading to said larger-diameter bore portion whereby an end of said larger-diameter portion of said piston is acted on by pressurised fluid supplied through said inflow duct;

(d) a hard piston-closing spring arranged to act on a closed end of the smaller-diameter portion of said piston at all times to oppose the pressure of the pressurised fluid on said end of the larger-diameter portion of said piston, said spring thereby determining the setting pressure of the valve and being arranged to yield only when said piston is displaced;

(e) an O-ring seal located in a circumferential annular groove in the inner wall of the smaller-diameter portion of said housing bore so as to seal off the smaller-diameter portion of said piston in the valve-closed position thereof;

(f) a blind-end axial bore formed in said piston and having an inlet end and an outlet end, said outlet end having a larger cross-sectional area than said inlet end, first transverse bores extending from said outlet end in a star-like formation to the outer surface of the smaller-diameter portion of the piston below the O-ring seal whereby displacement of the piston, when the setting pressure is exceeded, into the valve-open position thereof causes said first transverse bores to moves beyond the O-ring seal and to communicate with a fluid discharge duct, the combined cross-sectional areas of said first transverse bores being at least equal to the cross-sectional area of said outlet end; and

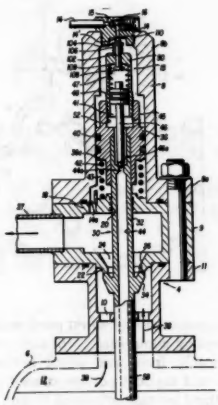
(g) second radially-extending transverse bores spaced axially from the first transverse bores and opening into an annular groove formed circumferentially in the larger-diameter portion of the piston adjacent the step thereof, the second radial bores being arranged to discharge fluid from said axial bore in said piston into a pressure chamber forming part of the housing bore and defined by the larger-diameter portion of the housing bore and the larger-diameter piston portion guided tightly therein, the cross-sectional area of the inflow duct being less than that of the larger-diameter portion of the housing bore and greater than that of the outlet end of said axial bore.

4,552,173

INTEGRATED CONTROL SAFETY VALVE

Jean Vayra, Meyreuil, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 23, 1983, Ser. No. 565,204
Claims priority, application France, Dec. 23, 1982, 82 21663
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—490 8 Claims



1. An integrated control safety valve for an enclosure containing a pressurized fluid, the valve incorporating a valve body fixed to a wall of the enclosure, said valve body being provided with an inlet and an outlet for the fluid, the inlet communicating with the pressurized enclosure, whilst the outlet is to the atmosphere, said valve body defining a chamber linking the inlet and the outlet, a valve placed in said chamber interrupting the connection between the inlet and the outlet, said valve comprising a stem, a main flap integral with said stem and able to seal a seat positioned between the inlet and the outlet, and a plunger integral with said stem and sliding in said chamber, elastic means for applying said main flap to its seat, a channel passing axially through said valve, a control flap sealing said channel, elastic means for applying said control flap to its seat, and an orifice connecting said chamber to the atmosphere, wherein said orifice is a metering hole and means are provided for sealing said orifice when the valve is in the closed position, said means being responsive to movement of said valve so that said means opens said orifice after opening of said main flap and closes said orifice before closing of said main flap.

4,552,174

SPRING-LOADED CHECK VALVE

Louis C. Carl, Horseheads, N.Y., and Charles J. Nevadunsky, Gillett, Pa., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 28, 1984, Ser. No. 656,120
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—527.2 13 Claims

1. A check valve comprising

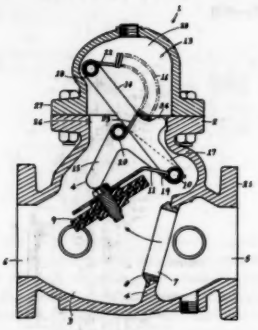
a housing bounding an internal space and including a partitioning portion that subdivides said internal space into an inlet compartment and an outlet compartment and has a

communicating passage therein and a valve seat thereon which extends around said passage and along a valve seat plane;

a supporting pivot mounted in said outlet compartment and having a pivot axis extending parallel to said plane and offset along said plane from said passage;

a valve member mounted on said pivot for pivoting about said pivot axis between a closing position in which it sealingly contacts said valve seat, and an open position in which it is remote from the latter;

a support component having a mounting portion mounted on said pivot, a support portion situated remotely from said pivot behind said valve member as considered in the direction toward said open position, and a contact portion;



a pressing component having a first portion mounted on said pivot for pivoting about said pivot axis, a second portion situated remotely from said pivot between said valve member and said support portion of said support component, and a third portion arranged to contact a predetermined area of said valve member; and

a buckling-type helical spring including one end portion secured to said support portion of said support component and another end portion secured to said second portion of said pressing component for said spring to urge said contact portion of said support component against said housing and said third portion of said pressing component toward contact with said predetermined area of said valve member.

4,552,175

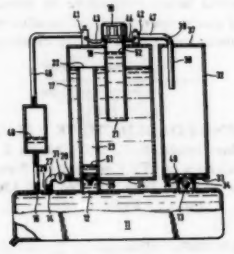
ARRANGEMENT OF FUEL TANKS FOR VEHICLES

Wolfram Schiemann, Eugen-Nagele-Strasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,410

Int. Cl.[4] F16K *24/00*

U.S. Cl. 137—571 **21 Claims**



1. Arrangements of fuel tanks for vehicles, comprising:

an inlet to the fuel tank;

a first air vent connection, provided on the fuel tank;

a filler pipe;

a piping arrangement leading from the filler pipe to the fuel tank;

a walled reserve tank in the course of the piping arrangement, built into the vehicle and communicating with the filer pipe;

a sleeve, having one end which is open upwards, and extending into the reserve tank, the height of the upwards open end within the reserve tank determining the reserve capacity, said sleeve passing through an opening in a wall of the reserve tank and having another end connected to the inlet of the fuel tank;

a bypass, having an upper open end passing through a wall of the reserve tank below the upwards open end of the sleeve, and a lower end opening into the fuel tank;

a valve in the bypass, which has an open condition and a shut condition and a return device in the valve for automatically returning the valve to the shut condition;

and, the improvement comprising:

(a) an expansion tank with a volume of at least 10% of the tank volume;

(b) a connection on the fuel tank, which lies below the lowest level of the expansion tank and above the maximum filling level in the fuel tank;

(c) a pipe leading from the lowest level of the expansion tank to the connection on the fuel tank;

(d) a second air vent connection, provided on the expansion tank above the lowest level of the expansion tank;

(e) a valve arrangement for alternatively connecting and shutting off the first and second air vent connections to the surrounding atmosphere;

(f) a closure device for the filler pipe, arranged and adapted to actuate the valve arrangement in such a way that, with the filler pipe open, the first air vent connection is open and the second air vent connection is shut; and

(g) a non-return valve which shuts upon higher rate of outflow, provided in the path extending from the connection on the fuel tank through the expansion tank and into the second air vent connection.

4,552,176

VALVE SLIDE PLATE

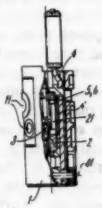
William P. Herring, Hemer, and Jan R. Kostorz, Menden, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 556,183

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244119

Int. Cl.[4] F16K *11/06*

U.S. Cl. 137—625.4 **3 Claims**



1. In a valve including a housing having a fixed valve base plate defining inlet ports for first and second liquids and an outlet port for mixed liquids, a valve slide plate of ceramic oxide material or the like located in said housing and having opposite faces one of which is in sliding contact with a surface of said valve base plate, said valve slide plate being provided with an interior overflow passage extending entirely there-

through from said one face to the other face of said valve slide plate and adapted to communicate with said inlet and outlet ports, and a movable driver element in said housing, said valve slide plate being connected to said driver element for joint movement therewith;

the improvement comprising that:

(a) said driver element includes a plate-shaped member having a surface juxtaposed to said other face of said valve slide plate, said plate-shaped member carrying said valve slide plate; and

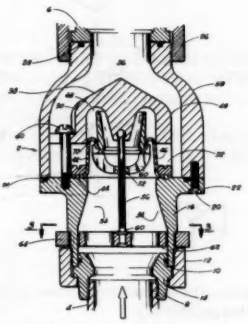
(b) a flexible vulcanized seal member is interposed between said other face of said valve slide plate and said surface of said plate-shaped member, said seal member being vulcanized to said valve slide plate at said other face of the latter around the periphery of said overflow passage and being in engagement with said surface of said plate-shaped member to provide a seal between said drive element and said valve slide plate, said seal member being formed to engage said plate-shaped member with only a minimal contact pressure determined by the prevailing liquid pressure.

4,552,177

HERMETICALLY SEALED VALVE

James M. Lapeyre, New Orleans, La., assignor to Laitram Corporation, Inc., New Orleans, La.

Filed Jun. 13, 1983, Ser. No. 503,717
Int. Cl.⁴ F16K *31/10, 7/18*
U.S. Cl. 137—625.28 **6 Claims**



1. A hermetically sealed valve for the continuous control of the flow of a liquid comprising:

a lower fluid region for intake of a liquid flow;

a plurality of internal flow restriction orifices, each orifice having an inlet and an outlet side, the inlet sides of which are fluidly connected with and form a terminator for the lower fluid region;

an upper fluid region in fluid communicating relationship with the lower fluid region through the flow restriction orifices;

a continuous diaphragm member sealingly connected from below said internal flow restriction orifices, sealing upwardly across said orifices, folding back upon itself, the diaphragm member being connected to an actuating means, the actuating means comprising a moveable cup having a lower driving section through which fluid passes and to which a first edge of the diaphragm member is attached, and an annular diaphragm support wall extending upwardly from the driving section;

said actuating means rollingly actuating said diaphragm between a lower position, wherein said orifices establish fluid communication between said upper and lower region, and an upper position, wherein said orifices are fluidly sealed by the diaphragm member to prevent fluid communication between said lower and upper regions;

screw driving means connected to said actuating means and extending below said actuating means in its lower position, rotation of said screw driving means moving said actuating means between its upper and lower positions;

magnetic rotation means affixed drivably to said screw driving means of the actuating means;

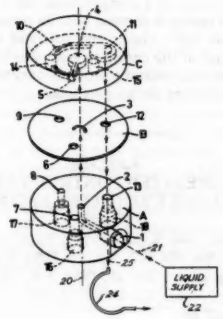
external magnetic field generation means which generates a controlled rotational magnetic field tangentially about said magnetic rotation means for rotating said rotation means and moving said actuating means between its upper and lower positions.

4,552,178

VARIABLE FLUID FLOW RESTRICTING THROTTLE

Aron Olsson, Mölndal, Sweden, assignor to Scanpump AB, Mölndal, Sweden

Filed Jan. 25, 1983, Ser. No. 460,966
Claims priority, application Sweden, Apr. 7, 1982, 8202249
Int. Cl.⁴ F16K *11/07*
U.S. Cl. 137—625.46 **9 Claims**



1. A throttle for restricting the flow of a liquid to be applied from a source of supply to at least one seal or rotary shaft, comprising a connecting member having an inlet connection for receiving the fluid from the source and at least one outlet connection for discharging the fluid to the seal, an inlet channel extending from said inlet connection through said connecting member, a throttling member having an inlet opening and a vortex chamber spaced from said inlet opening therein, said inlet opening of said throttling member being in communication with said inlet channel of said connecting member so as to receive fluid passing therethrough, a fluid passageway connecting said inlet opening in said throttling member with said vortex chamber, said fluid passageway opening substantially tangentially into said vortex chamber, said throttling member being rotatably mounted about a common central axis to said connecting member and being secured substantially in liquid tight engagement thereto, and a return channel within said connecting member extending substantially coaxially with respect to said vortex chamber and connecting said vortex chamber in fluid communication with said outlet connection of said connecting member.

4,552,179

MINIATURE SOLENOID VALVE

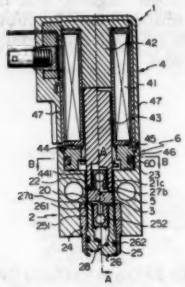
Tetsunobu Tarusawa; Shoiti Kawada, and Ryosuke Senzai, all of Aichi, Japan, assignors to CKD Corporation, Komaki, Japan

Filed Feb. 29, 1984, Ser. No. 585,344

Claims priority, application Japan, Aug. 25, 1983, 58-131329[U]; Sep. 1, 1983, 58-135679[U]

Int. Cl.⁴ F15B *13/044*; F16K *31/06*

U.S. Cl. 137—625.65 **23 Claims**



1. A miniature solenoid valve comprising a valve casing having a valve chest and a plurality of flow passages in communication with said valve chest formed therein; a valve body movably received in said valve chest for controlling the communication between the valve chest and said passages; and a solenoid provided adjacent to said casing for moving said valve body by means of a plunger, said valve being characterized in that said casing is formed with an opening in communication with said valve chest, said solenoid is removably received at one end of the casing in said opening and said valve casing and said solenoid are secured together by means of fixing means including fixing pins passing through the casing and solenoid.

4,552,180

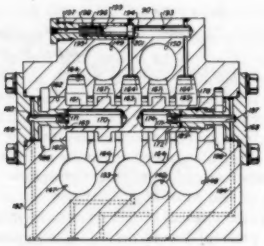
PILOT OPERATED CONTROL VALVE FOR HYDRAULICALLY ACTUATED RECIPROCATING PUMP

James R. Mayer, 7344 S. Alton Way, Englewood, Colo. 80112

Division of Ser. No. 456,597, Jan. 10, 1983, Pat. No. 4,477,232. This application Jul. 25, 1984, Ser. No. 634,355

Int. Cl.⁴ F15B *13/042*

U.S. Cl. 137—625.66 **6 Claims**



2. A pressure fluid distributing valve, said valve including a housing, a spool type valve closure member reciprocably disposed in a bore formed in said housing and movable between first and second positions for alternately valving pressure fluid from a fluid supply port to a working fluid port, and closing off communication between said supply port and said working fluid port, respectively, first and second pilot actuator means for moving said closure member to said first and second positions in response to pilot pressure fluid signals conducted to said valve, said pilot actuator means comprising opposed axially extending bores formed in opposite ends of said closure member, and opposed pilot actuator piston means in said housing and projecting into said bores, respectively, passage means in communication with said bores in said closure member for introducing pilot pressure fluid to respective ones of said bores for shifting said closure member between said first and second positions, and means cooperable with one of said bores and with pilot actuator poston means projecting into said one bore for maintaining said closure member in one of said positions only when said closure member is in said one position and when pilot pressure fluid is being conducted to both of said pilot actuator means at a pressure less than a predetermined pressure in the other of said bores to prevent shifting of said closure member to the other of said positions.

4,552,181

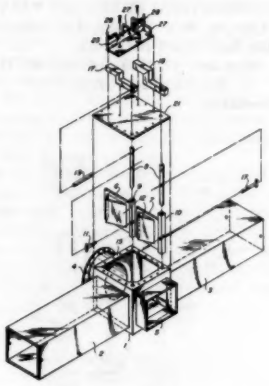
HIGH SPEED DUMP VALVE FOR FIRE FIGHTING APPARATUS

Bruce Hawkins, Route 1, Box 345, Kenai, Ak. 99611

Filed Dec. 14, 1984, Ser. No. 681,955

Int. Cl.⁴ F16K *11/22, 3/04*

U.S. Cl. 137—875 **2 Claims**



1. A fast action fire dump valve for use on tank trucks having an outlet valve comprising:

A. A directional valve portion having an inlet port, a first outlet port located opposite to said inlet port, a second outlet port located purpendicularly to said inlet and outlet ports and a third outlet port being purpendicularly disposed to said inlet and first outlet ports and opposite to said second outlet port, said valve portion forming a generally square configuration;

B. A flange, having bolt holes, fixedly attached to said valve portion at said inlet port, the flange is used to connect said valve portion to the outlet valve of said tank truck;

C. A first door, having hinge means, rotatably attached to said valve portion by said hinge means, being disposed within said valve portion, said first door being positioned so that the door can close off said first outlet port or said second outlet port, depending on its position which is manually controllable;

D. A second door, also having hinge means and also being rotatably attached to said valve portion by said hinge means and also being disposed within said valve portion, said second door being positioned so that it can close off either the first outlet port or the third outlet port, depending on its position, which is manually controllable, said door positions are mutually exclusive in that if the first door is closing off the first outlet port, the second door must be closing off the third outlet port, thereby forcing

water through the second outlet port and, if the second door is closing off the first outlet port, the first door must be closing off the second outlet port, thereby forcing water through the third outlet port and, if the first door is closing off the second outlet port and the second door is closing off the third outlet port, water will be forced through the first outlet port;

E. Control means to position said doors in an operative position;

F. Locking means to secure said control means once an operative position has been selected, said locking means prevent inadvertent repositioning of said control means;

G. A first conduit means, fixedly attached to said second outlet port and extending outwardly therefrom; and

H. A second conduit means, fixedly attached to said third outlet port, extending outwardly therefrom.

4,552,182

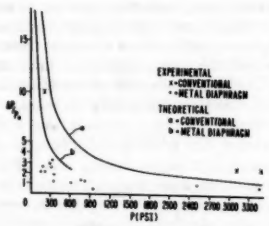
HYDRAULIC PULSE DAMPENER EMPLOYING TWO STIFF DIAPHRAGMS AND NESTING MEMBERS

Stephen H. Graham, Alameda, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 487,371, Apr. 21, 1983, abandoned. This application Aug. 13, 1984, Ser. No. 640,065

Int. Cl.⁴ F16L *55/04*

U.S. Cl. 138—30 **4 Claims**



1. A hydraulic pulse dampener, comprising:

a fluid-tight housing having an inlet port for introduction of a fluid into said housing, an outlet port for discharge of said fluid from said housing, and a first recess and a second recess, and

a first diaphragm and a second diaphragm positioned separately within said housing adjacent respectively said first and second recesses, the region between said first diaphragm and said first recess and the region between said second diaphragm and said second recess being sealed from said fluid, both diaphragms being made of a material that will flex towards said recesses to assume a nesting position therein at some predetermined rise in pressure of said fluid, absorb hydraulic pulse energy of said fluid and store the energy as elastic strain energy,

wherein the diaphragms have different flexibility so that they assume nesting positions at different pressure levels.

4,552,183

REPAIRING LEAKS IN PIPELINES CARRYING FLUENT MEDIUM

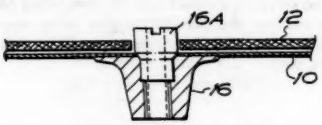
Douglas K. Chick, Hertfordshire, England, assignor to Ready-seal Limited, Northampton, England

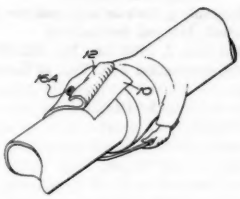
Continuation of Ser. No. 396,616, Jul. 9, 1982, abandoned, and a continuation-in-part of Ser. No. 128,588, Mar. 10, 1980, Pat. No. 4,357,961, which is a continuation-in-part of Ser. No. 900,372, Apr. 26, 1978, abandoned, which is a continuation of Ser. No. 686,334, May 14, 1976, abandoned. This application Jun. 26, 1984, Ser. No. 624,775

Claims priority, application United Kingdom, May 14, 1978, 20248/75

Int. Cl.⁴ F16L *55/16*

U.S. Cl. 138—99 **5 Claims**





1. Apparatus for use in repairing a pipe leak comprising a flat sheet bandage for wrapping around the pipe in the vicinity of the leak, the bandage being flexible and comprising a laminate of an inner flexible first layer of a synthetic resinous material which is adapted to bear directly against the exterior of the pipe and which is of sufficient size to cover the outer circumference of the pipe and which is integrally attached to a vent bush, which is also of synthetic resinous material, and a second flexible layer of a resin absorbent material through which the vent bush passes, said second layer also being dimensioned to cover the outer circumference of the pipe, said first and second layers being coextensive in area.

4,552,184

METHOD AND APPARATUS FOR CONTROLLING A ROTATION DOBBY

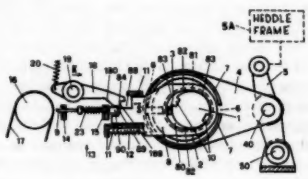
Walter Kleiner, Hirzel-Zurich, Switzerland, assignor to Staeubli Ltd., Zurich, Switzerland

Filed Dec. 2, 1983, Ser. No. 557,765

Claims priority, application Switzerland, Dec. 22, 1982, 7479/82

Int. Cl.⁴ D03C *1/00*

U.S. Cl. 139—66 R **12 Claims**



1. A device for the patternlike control of the key of a rotation dobby, comprising a rotatably supported drive shaft

which has two axially extending grooves, on which drive shaft there is rotatably supported an eccentric ring which has a radially movable control key supported thereon, and on the eccentric ring is rotatably supported a connecting rod having two locking openings which the control key can engage and which lie diametrically opposite one another, wherein the connecting rod acts through a lever arrangement onto a heddle frame of a weaving machine, and including a needle mechanism having at least one movably supported reading member which reads a pattern card and controls an operating lever which in turn controls movement of a key-shifting gate having an opening which is closed peripherally and through which said drive shaft extends, wherein along the edge of the opening there is arranged a projecting collar which operatively engages and serves as a closed cam for controlling radial movement of the key, the key-shifting gate being supported in a rectilinear sliding guide for movement radially with respect to the drive shaft.

4,552,185

HEALD FRAME

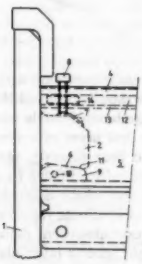
Martin Graf, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Mar. 2, 1984, Ser. No. 585,443

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308371

Int. Cl.⁴ D03C 9/06

U.S. Cl. 139—91 **2 Claims**



1. A heald frame comprising at least one frame stave having a recess in at least one end thereof, at least one lateral support having a projection protruding from one side thereof adjacent one end of the lateral support and adapted to be inserted in said recess so that said stave and said support are disposed at right angles to each other, said projection having a lower bearing surface, and connecting means for detachably securing said projection within said recess, said connecting means comprising screw means supported by said stave and extending into operative engagement with said projection in said recess to detachably secure said projection therein, a rigid wedge disposed in said recess and affixed to said stave at a side thereof closer to a heald-carrying rods of said stave, an upper surface of said wedge being inclined upwardly toward said one end of said stave and facing toward said bearing surface of said projection, said bearing surface having the same inclination as said upper surface of said wedge, said screw means being disposed in the plane of said frame, lying parallel to said lateral support, and bearing against said projection so that said surfaces of said wedge and said projection are pressed against one another to produce a component of force exerted in said projection parallel to said stave to draw said lateral support against said end of said stave and a component of force exerted on said projection parallel to said support to clamp said projection in said recess of said stave.

4,552,186

WARP LET-OFF MECHANISM OF WEAVING MACHINE

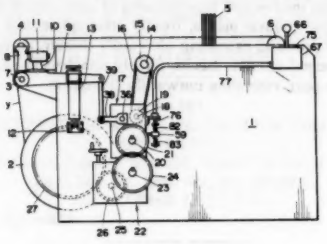
Shuichi Kojima, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1983, Ser. No. 556,692

Claims priority, application Japan, Dec. 2, 1982, 57-210597; Jul. 26, 1983, 58-135125

Int. Cl.⁴ D03D 49/06

U.S. Cl. 139—100 **23 Claims**



1. A weaving system comprising

driving means,

a weaving mechanism connected with said driving means, said weaving mechanism being driven by said driving means in a forward direction and a reverse direction, said weaving mechanism comprising

a main mechanism, and

a warp let-off mechanism comprising a warp beam, means for sensing warp tension, and speed change means, said speed change means being connected with said driving means, and driven by said driving means in the forward or reverse direction by receiving an input rotation, said speed change means being connected with said warp beam for driving said warp beam by transmitting an output rotation to said warp beam, said speed change means being connected with said warp tension sensing means, and capable of changing a ratio between the input speed of the input rotation and the output speed of the output rotation thereby to change the speed of the warp beam rotation, said speed change means having shift means for changing the direction of the output rotation, said shift means having a forward shift position and a reverse shift position, said speed change means driving said warp beam in the forward direction when said shift means is in the forward shift position irrespective of whether the input rotation is in the forward direction or in the reverse direction, said speed change means driving said warp beam in the reverse direction when said shift means is in the reverse shift position irrespective of whether the input rotation is in the forward direction or in the reverse direction,

operating means connected with said driving means for controlling the operation of said weaving mechanism, said operating means having a forward operation position and a reverse operation position, said driving means driving said weaving mechanism in the forward direction when said operating means is in the forward operation position, and in the reverse direction when said operating means is in the reverse operation position, and

interlock means connected with said operating means and said shift means of said speed change means, said interlock means bringing said shift means to the forward shift position when said operating means is in the forward operation position, and to the reverse shift position when said operating means is in the reverse operation position.

4,552,187

WEAVING MACHINE

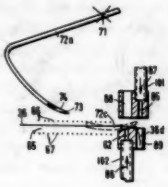
Gotthilf Bertsch, Rüti, and Josef Braun, Seuzach, both of Switzerland, assignors to Maschinenfabrik Sulzer-Rüti AG, Rüti, Switzerland

Filed Jan. 14, 1985, Ser. No. 691,384

Claims priority, application European Pat. Off., Jan. 23, 1984, 84810038.4

Int. Cl.[4] D03D *47/48*

U.S. Cl. 139—434 12 Claims



1. In a weaving machine, comprising:

a weft thread supply cone which remains outside a weaving shed during weft insertion;

weft threads being unwound from said weft thread supply cone during weft insertion;

a selvedge-tucking needle for tucking in successive ends of weft threads which lie outside the weaving shed subsequently to the weft thread being picked;

a threading nozzle separate from said selvedge-tucking needle for transferring said weft thread ends of said weft threads to said selvedge-tucking needle, the improvement which comprises:

a retention nozzle for acting upon said weft thread previous to activation of said threading nozzle for retaining said weft thread end before transfer thereof to said selvedge-tucking needle.

4,552,188

WEFT INSERTING DEVICE

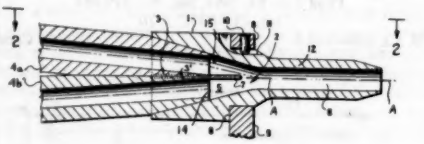
Vladimír Kuda, Blazovice; Vladimír Vasícek, Moravsky Krumlov; Frantisek Vykydal, and Jirí Vystrcil, both of Brno, all of Czechoslovakia, assignors to ZVS Vyzkumnevyvojovy ustav koncernova ucelova organizace, Brno, Czechoslovakia

Filed Mar. 29, 1984, Ser. No. 594,871

Claims priority, application Czechoslovakia, Mar. 29, 1983, 2159-83

Int. Cl.[4] D03D *47/30*

U.S. Cl. 139—435 3 Claims



1. In a weft inserting device adapted to be fixed on the frame of a jet loom or the beat-up motion thereof, said device having a pair of picking nozzles provided with pressure fluid feeds and having inlet portons for feeding weft threads into mixing tubes united at a point of their outlet sides for said weft threads into a single central outlet portion having a single outlet opening, said central outlet portion being followed by a directing portion, the improvement wherein said central outlet portion, starting from the discharge point of said mixing tubes, is divided equally at least in a portion of its length by means of a flat baffle lying in a first plane which is perpendicular to a second plane containing the longitudinal axis of said mixing tubes, the longitudinal central axis of said baffle lying in the central axis of said directing portion.

4,552,189

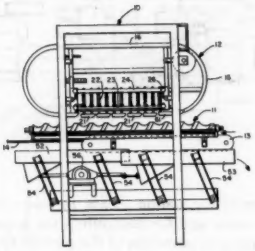
MACHINE AND METHOD FOR CLEANING CAN FLANGES

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Sep. 29, 1982, Ser. No. 427,675

Int. Cl.[4] B65B *63/00*; B30B *1/26*

U.S. Cl. 141—80 10 Claims



1. A machine for cleaning the flanges of cans preparatory to can seaming after a food material like whole or french cut green beans has been introduced into open cans, comprising a first means for conveying the cans along a generally horizontal pathway with their open end portions uppermost, the cans containing a quantity of the food material with some of the food material disposed on the can flanges, a second conveying means disposed above the first conveying means, means carried by the second conveying means for applying pressure to the upper flanges of the cans and to sever food material thereon, said last named means comprising pistons carried by the second conveying means, each piston having a cylindrical surface dimensioned closely to fit within the upper portions of the cans, a piston being presented to the upper open end of each of the cans as it moves along the pathway, a lower end of the cylindrical surface of each piston forming a cutting edge, means disposed above the second conveyor for causing each such piston to be advanced downwardly toward and into the upper end portion of an associated can whereby food material on the can flange is severed and the food therein is compressed, and means for subsequently retracting the piston from the can.

4,552,190

FILLING MACHINES

Robert H. Wilson, and Andrew J. Wilson, both of Glasgow, Scotland, assignors to James Hamilton & Sons (Engineering) Ltd., Glasgow, Scotland

Filed May 9, 1984, Ser. No. 608,468

Claims priority, application United Kingdom, May 16, 1983, 8313382

Int. Cl.[4] B65B *43/42*

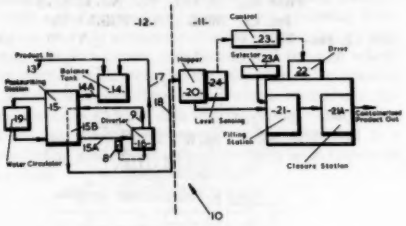
U.S. Cl. 141—82 3 Claims

1. An integrated filling and pasteurizing apparatus comprising a filling machine, a pasteurizing machine, and control means for providing synchronous operation of said filling machine and said pasteurizing machine;

said pasteurizing machine including a balance tank for temporary storage of the product to be pasteurized, and a pasteurizing station means coupled for receiving the product from said balance tank and for delivering the pasteurized product to said filling machine;

said filling machine including a hopper coupled for receiving the pasteurized product from said pasteurizing station means, a container-filling station means coupled for sequentially receiving metered quantities of the pasteurized

product from said hopper and for sequentially filling containers with the metered quantities of the pasteurized product, container-closure station means for receiving filled containers from said container-filling station means and for closing the containers, and indexing drive means operating at varying rates for sequentially delivering containers to be filled to said container-filling station means and sequentially moving filled containers from said



container-filling station means to said container-closure station means and for controlling the sequential delivery of the metered quantities of the pasteurized product from said hopper to said container-filling station means; and

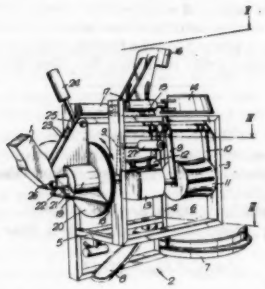
said control means being operatively connected with said drive means for controlling the indexing rate thereof and including liquid level sensor means associated with said hopper for emitting signals to govern the control of the indexing rate of said drive means.

4,552,191

TREE HARVESTING DEVICE

Olavi Kuusilinna, SF-34510 Luode, Finland

Filed Mar. 5, 1984, Ser. No. 586,458
Int. Cl.⁴ A01G *23/08*
U.S. Cl. 144—3 D **7 Claims**



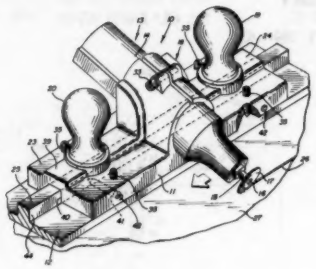
1. Tree harvesting device, which is connectable to a mobile vehicle by means of a jib and has means for cutting, felling and debranching a tree, said device comprising a general U-shaped frame having two side parts, a rear part and an open front side; cutting means, conveying means and debranching means attached to said side parts; a felling frame attached to said rear part by means of a turnable means in order to turn the device in a transversal plane with respect to a vertical plane in the longitudinal direction of the jib; and means for connecting said felling frame to the jib so that said device is turnable in said vertical plane in the longitudinal direction of the jib.

4,552,192

CUTTING TOOL MECHANISM

Thomas P. Eaves, 262 Lake St., Apt. 2-W, Bloomingdale, Ill. 60108

Filed Jun. 9, 1983, Ser. No. 502,688
Int. Cl.⁴ B07D *1/00*
U.S. Cl. 144—136 C **18 Claims**



16. A cutting tool mechanism comprising:

a slide member defining a flat slide plane;

a track member for slidably guiding the slide member along a preselected path;

a saw having a power drive, a drive shaft driven by the power drive, and means at the distal end of the shaft for coaxially mounting a rotary saw blade thereto;

mounting means for mounting the power drive to the slide member with said shaft cantilevered therefrom; and

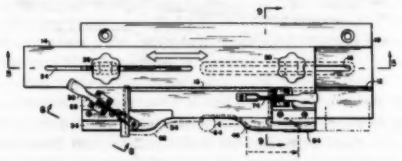
positioning means for causing a saw blade mounted to the shaft to cut an elongated veneer edge in a workpiece, said positioning means comprising means forming a portion of said mounting means for positioning the axis of said power drive shaft at an angle of approximately 15° to said slide plane and at an angle to the direction of guided movement of the slide member on the track member, said positioning means comprising means for positioning said axis at a single preselected acute angle to the direction of guided movement of the slide member on the track member, said mounting means comprising clamp means permitting axial adjusting of the power drive therein.

4,552,193

PANELLED DOOR FRAME SHAPER TEMPLATE

Joe Armas, Fremont, Calif., assignor to Armas & Harshbarger Manufacturing Co., Hayward, Calif.

Filed Feb. 13, 1984, Ser. No. 579,413
Int. Cl.⁴ B27C *5/10*
U.S. Cl. 144—144.5 **4 Claims**



1. An adjustable template for the shaping of panelled cabinet door rails and stiles, said template comprising:

an elongated base having a substantially plane top surface with a longitudinal slot therein, a substantial length of a first edge on a longitudinal first side of said elongated base being parallel with the axis of said slot;

a longitudinally adjustable elongated slideable member within the slot in the surface of said base, said slideable

member having an indexing edge extending to the top surface of said base;

means for locking said slideable member at any desired location within said slot;

a first removeable sub-template secured to a front corner on said first side of said base, said first sub-template haveing a top surface coplanar with the top surface of said base and a working edge corresponding to the desired form of a shaped cabinet door component, said first sub-template extending to that portion of said first edge of said base that is parallel with said longitudinal straight slot;

a second removeable sub-template secured to a forwardly extending corner on said elongated slideable member that overlies the surface of said base, said second sub-template having a top surface coplanar with the surfce of said base and said first sub-template and having a working edge terminating on that portion of the front edge of said base that is parallel with said longitudinal straight slot; and

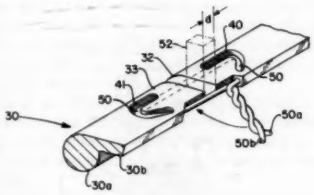
first and second stock clamping means respectively positioned on said front corner of said base and on said forwardly extending corner of said slideable member for securing a piece of stock to be shaped against said slideable member index edge and between the corner on said base and said slideable member.

4,552,194

LOCKING CONFIGURATION FOR A WHEEL RIM FLANGE RETAINING RING

Richard P. Brown, Selden, N.Y., and Harold E. Correll, Uniontown, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 11, 1984, Ser. No. 619,665
Int. Cl.[4] B60B *25/18*
U.S. Cl. 152—410 **14 Claims**



1. In a wheel rim assembly having an inboard bead flange and a separable outboard bead flange and a retaining ring having a split defining circumferentially oriented terminal ends, said retaining ring having inboard and outboard facing portions, the inboard facing portion being received within a groove in the rim to secure the separable bead flange on the rim, an improved configuration for a locking retaining ring comprising:

a first bore in each terminal end circumferentially within the inboard portion of the ring;

a second bore in each terminal end in the outboard facing portion of the ring and at an angle with respect to the first bore;

a groove in the outer surface of each terminal end interconnecting each first bore with each second bore; and

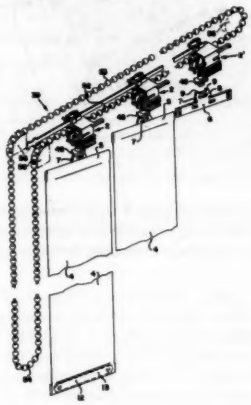
a continuous length of steel wire threaded through the bores from one terminal end to the other and retained within the grooves, the ends of the wire exiting from the second bores and twisted together such as to limit the extent of expansion of the retaining ring when subjected to centrifugal forces tending to expand the ring.

4,552,195

STRIP CURTAIN

Heinz Dürig, Ostermundigen; Hans Grützner, Kehrsatz, and Konrad Bratschi, Muri, all of Switzerland, assignors to K. Bratschi, Silent Gliss, Muri, Switzerland

Filed Dec. 7, 1982, Ser. No. 447,698
Claims priority, application Switzerland, Dec. 7, 1981, 7812/81
Int. Cl.[4] E06B *9/307, 9/26*
U.S. Cl. 160—168 R **27 Claims**



1. A strip curtain having glide elements guided by a curtain rod and connected to each other by separation limiting means, and which support freely hanging curtain strips from vertical pivot axes, each of which is rotatable in limited manner by an operating means including a pinion which is connected through a slip coupling with an associated pivot axis and in which the pinion meshes with a drive means which is slidably carried by the curtain rod, wherein the drive means meshing with the pinion is a bead chain, the pinion is connected with the pivot axis through a worm drive, and the slip coupling is positioned between the pinion and the worm drive.

4,552,196

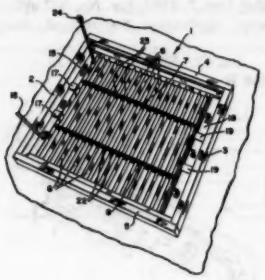
VENETIAN BLIND ASSEMBLY INCLUDING TENSION MEANS FOR IMPARTING TENSION INTO SLAT SUPPORTING MEANS

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 386,286, Jun. 8, 1982, abandoned. This application Dec. 8, 1983, Ser. No. 559,367
Int. Cl.[4] E06B *9/28, 9/307*
U.S. Cl. 160—174 **19 Claims**

17. A venetian blind assembly comprising a plurality of slats wherein the assembly is adapted to be connected at opposite ends extending parallel to the slats to fixed frame members, in which connected position said blind assembly is non-retractable, at least two slat support means for individually tiltably supporting said slats with each slat support means comprising two longitudinal side members and further support members to support said slats on said side members, and slat tilt means connected to one end of each of said slat support means; characterized in having in addition resilient means cooperating, at the other end of said slat support means from said slat tilt means, with the longitudinal side members of said slat support means for imparting tension in at least one of the longitudinal side members of each slat support means in all positions of the slats, a first headrail mounting said slat tilt means adapted to be connected to a fixed frame member, a second headrail into which said resilient means are positioned adapted to be con-

nected to a further frame member, in that one of said headrails is detachably connected to a fixed frame member, a slat moving means connecting said headrails by which the detachably connected headrail and slats may be moved towards the other



headrail on detachment from a fixed frame member, and support portions on the end of said slats adapted to slidably engage fixed side frame members extending between said fixed frame members.

4,552,197

MOULD ASSEMBLY FOR CASTING METAL ARTICLES AND A METHOD OF MANUFACTURE THEREOF

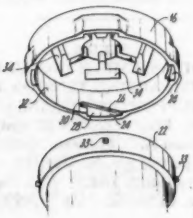
David Mills, Bristol, England, assignor to Rolls-Royce Ltd., London, England

Filed Jun. 30, 1983, Ser. No. 509,813

Claims priority, application United Kingdom, Jul. 3, 1982, 8219294

Int. Cl.⁴ B22C 9/04

U.S. Cl. 164—34 **10 Claims**



1. A method for the manufacture of a ceramic mould assembly for casting directionally solidified articles, the components of such assembly including a runner and riser system connected to at least one thin-walled mould, comprising the steps of:

separately injection moulding the components of the assembly,

providing features on the components which form or cooperate with interengageable mechanical locking means to hold the separate components of the assembly together,

forming joints between the components of the assembly with the interengageable locking features in engagement to lock the components of the assembly together, and

sealing the joints of the assembly by applying a coating of a ceramic sealant.

4,552,198

REMOVING REFRACTORY MATERIAL FROM COMPONENTS

David Mills, and Alan D. Kington, both of Bristol, England, assignors to Rolls-Royce Ltd., London, England

PCT No. PCT/GB81/00216, § 371 Date Jun. 2, 1982, § 102(e) Date Jun. 2, 1982, PCT Pub. No. WO82/01144, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 2, 1981, Ser. No. 387,890

Claims priority, application United Kingdom, Oct. 4, 1980, 8032060

Int. Cl.⁴ B22D 7/00

U.S. Cl. 164—122.2 **19 Claims**

1. A method of casting a component having an opening therein comprising the steps of:

inserting into a mold a refractory material of high temperature fired re-crystallized substantially 100% dense pure metal oxides defining the opening;

introducing into the mold molten component material;

solidifying the component; and

removing the refractory material by chemically reacting it with nascent hydrogen produced by immersing the casting in an aqueous solution of a hydroxide or hydride of a metal selected from sodium, potassium and lithium and containing substantially 10–35% W/V of water and leaching the resultant products; all the while heating the solution to a temperature in the range of 150°–370° C.

4,552,199

APPARATUS FOR PRODUCING FLAKE PARTICLES

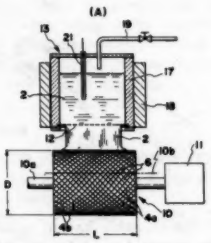
Takashi Onoyama, Yokohama; Osamu Ando, Kawasaki, and Tsuyoshi Minakata, Yokohama, all of Japan, assignors to Nippon Yakin Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,808

Claims priority, application Japan, Apr. 8, 1982, 57-58515; Sep. 7, 1982, 57-155667; Feb. 8, 1983, 58-19170; Feb. 8, 1983, 58-19171

Int. Cl.⁴ B22D 11/06

U.S. Cl. 164—423 **28 Claims**



1. An apparatus for producing flake particles from a continuous stream of projected molten material comprising:

a heat extracting member rotatably received on a shaft and having an outer peripheral surface carrying a plurality of heat extracting sections, the heat extracting sections covering the entire outer peripheral surface;

a molten material reservoir for containing the molten material;

at least one nozzle mounted on the reservoir for directing the molten material onto the outer peripheral surface of the heat extracting sections;

means for driving the heat extracting member to rotate the heat extracting sections;

each of the heat extracting sections having a discrete small cooling surface defined by two adjacent parallel and obliquely extending grooves formed on the outer surface of the heat extracting member between and with respect to both axial ends of the heat extracting member and two other parallel grooves extending in a different direction

from that of the two adjacent grooves, the heat extracting sections having an essentially planar element on which the molten material solidifies;

the plurality of heat extracting sections being composed of an integrated member consisting of the unit discrete small cooling surfaces being successively arrayed in directions angularly oriented to both the axial and rotational directions of the heat extracting member; and

at least two sides of the discrete small cooling surfaces cross a line parallel to the axis of the heat extracting member.

4,552,200

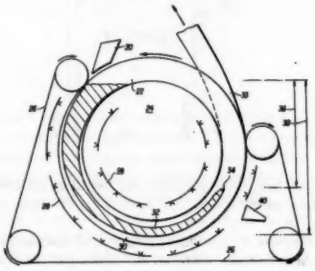
CONTROL IN CONTINUOUS CASTING TO ENHANCE FEEDING

Uday K. Sinha, and Frank A. Peacock, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 431,439, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 220,647, Dec. 29, 1980, abandoned. This application Mar. 22, 1984, Ser. No. 592,198

Int. Cl.⁴ B22D *11/16*

U.S. Cl. 164—454 **7 Claims**



1. A method for optimally operating a wheel-type continuous caster, such that solidification porosity and macrosegregation in the continuous strand thus produced is substantially minimized while casting rate is substantially maximized, comprising the steps:

(a) first, establishing operation of said caster at a condition of steady-state continuous casting, with cooling set at substantially maximum capacity to produce an apex of solidification at a location where the casting completely solidifies;

(b) monitoring the location of the apex of the solidification zone within the solidifying strand being cast;

(c) if said solidification apex is not located downcourse of the lowermost wheel position, then increasing casting speed until the apex is located downcourse of the lowermost wheel position;

(d) monitoring the presence of solidification porosity within said strand downcourse of said solidification apex;

(e) adjusting casting conditions according to the criteria:

(i) if porosity is present, decrease casting speed so as to shift said apex counter to the direction of casting and in the direction of increasing metalostatic pressure until formation of solidification porosity is substantially minimized; further provided that if said apex has been shifted substantially to the lowermost wheel position without achieving said minimization, then decreasing cooling sufficiently to shift said apex downcourse of the lowermost position by a selected distance and then repeating the procedure of this substep; or

(ii) if porosity is not present, increase casting speed so as to shift said apex in the direction of casting until formation of porosity impends; and

(f) maintaining casting conditions within a desired porosity tolerance range about said adjusted conditions.

4,552,201

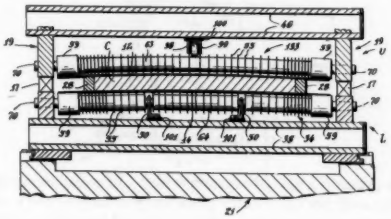
METHODS FOR SHAPING THE CASTING REGION IN A TWIN-BELT CONTINUOUS CASTING MACHINE FOR IMPROVING HEAT TRANSFER AND PRODUCT UNIFORMITY AND ENHANCED MACHINE PERFORMANCE

John F. B. Wood, Burlington, Vt., assignor to Hazelett Strip-Casting Corp., Colchester, Vt.

Continuation of Ser. No. 330,727, Dec. 14, 1981, abandoned. This application May 8, 1984, Ser. No. 608,226

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—481 **10 Claims**



1. In the method of continuously casting metal product directly from molten metal in which the molten metal is confined and solidified in a casting region defined above and below by upper and lower cooled endless, flexible, traveling, casting belts supported by a plurality of upper back-up rollers and a plurality of lower back-up rollers in respective upper and lower belt carriages and laterally defined by first and second traveling side dams, the method of controlling belt shape comprising the step of:

providing at least some bowable back-up rollers in both of said carriages,

adjustably bowing at least some of said bowable back-up rollers in a first carriage and permitting said bowable back-up rollers in the second carriage to bow for urging the upper and lower belts toward contact with the cast metal product.

4,552,202

ALKALI METAL SILICATE SOLUTIONS AND METHOD OF FORMING FOUNDRY PRODUCTS USING THE SOLUTIONS

John W. J. Bugg, Leeds, and Stephen Houlden, Pudsey, both of England, assignors to The White Sea & Baltic Company Limited, England

PCT No. PCT/GB82/00043, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02844, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 19, 1982, Ser. No. 433,132

Claims priority, application United Kingdom, Feb. 20, 1981, 8105434

Int. Cl.⁴ B22C *1/18*; C01B *33/32*

U.S. Cl. 164—528 **7 Claims**

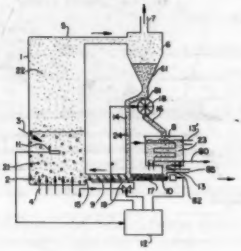
1. In a method of making foundry moulds or cores by mixing sand or other particulate material with an aqueous binder solution, shaping the mix into the desired mould or core and then curing the binder, the improvement consisting of using as a binder an aqueous alkali metal silicate solution which has been made by dissolving silica powder obtained by condensation during the production of ferrosilicon and contains impurities that are insoluble in aqueous alkali and that include carbon, and the impurities are suspended in the solution as a stable suspension by means of from 0.01 to 1% by weight of a suspending agent selected from the group consisting of celluloses and starches.

4,552,203

METHOD AND DEVICE FOR CONTROLLING THE TEMPERATURE OF A REACTION CARRIED OUT IN A FLUIDIZED BED

Gérard Chrysostome, Creusot, and Daniel Borgnat, Montchanin, both of France, assignors to Creusot-Loire, Paris, France

Filed Apr. 22, 1983, Ser. No. 487,672
Claims priority, application France, Apr. 28, 1982, 82 07379
Int. Cl.⁴ F28D *19/02*
U.S. Cl. 165—1 **10 Claims**



1. Method for controlling the temperature of a reaction conducted inside a vessel, in a fluidized bed containing solid particles which can be entrained with smoke and then recovered in a separating device and recycled into said fluidized bed after passage into a heat exchanger where they yield up their heat, said method comprising the steps of

(a) dividing the flow of particles separated from said smoke into two parts, namely, a hot part recycled directly into said fluidized bed and a cooled part constituted by particles taken up at the outlet of said separating device;

(b) passing it into said heat exchanger to constitute a reserve of cold material which can be mixed with said hot part before reinjection into said fluidized bed; and

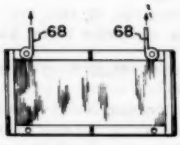
(c) regulating the relative flow rates of hot particles and of cold particles so as to control the flow rate and the average temperature of the flow of particles recycled into said fluidized bed to maintain it at the desired level of the reaction temperature in the midst of the latter.

4,552,204

MEANS FOR LIFTING HEATING ELEMENT BASKETS

Kenneth O. Bellows, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 1, 1983, Ser. No. 557,034
Int. Cl.⁴ F28D *19/04*
U.S. Cl. 165—10 **1 Claim**



1. A basketed heating element for use in a rotary regenerative heat exchanger comprising:

an open ended housing defining a volume;

a plurality of heating element plates disposed in spaced relation within the volume defined by the open ended housing;

an element holding bar extending transversely across each open end of the housing so as to divide each open end of the housing summetrically thereabout and to retain the heating element plates therein;

two spaced apart holes through the element holding bar, the first hole positioned near one end of the element holding bar and the second hold positioned near the opposite end of the element holding bar;

clevis means for spanning the element holding bar about each of said holes; and

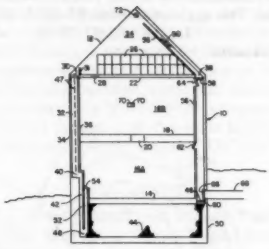
a clevis pin for inserting through each clevis and the hold in the element holding bar which the clevis spans.

4,552,205

DUAL STORAGE HEATING AND COOLING SYSTEM

Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193

Filed Oct. 31, 1983, Ser. No. 546,995
Int. Cl.⁴ F24D *11/00*
U.S. Cl. 165—18 **13 Claims**



1. A heating and cooling system for use in an enclosed structure including an air space, said system comprising, in combination:

first store means for providing a source of heat and including a first heat transfer material for storing excessive heat;

second store means, disposed substantially below said first store means, for providing a heat sink and including a second heat transfer material for absorbing heat from air passing through said second store means; and

temperature control means for maintaining the temperature within said air space substantially within a predetermined temperature range between first and second preselected levels of temperature, said temperature control means including first means for transmitting air through said first store means, means for selectively directing the flow of air either (a) from said first store means into said air space or (b) from said air space into said second store means, second means for transmitting air through said second store means, sensor means for sensing the level of temperature within said air space, wherein said temperature control means is operable in response to said sensor means in (1) a first mode of operation for heating said air space wherein said first means for transmitting air through said first store means and said means for selectively directing the flow of air heated by said first store means into said air space when the temperature sensed by said sensor means drops below said first preselected level; and (2) a second mode of operation for cooling said air space wherein said second means for transmitting air through said second store means and said means for selectively directing the flow of air from said air space to said second store means when the temperature level sensed by said sensor means rises above said second preselected level;

wherein said means for selectively directing the flow of air includes (i) common duct means connected between said first and second store means for transmitting air in said first and second modes of operation, (ii) first damper means adapted to open from said common duct means into said air space during said first mode of operation, and remain closed during said second mode of operation, and (iii) second damper means adapted to remain closed dur-

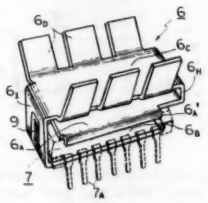
ing said first mode of operation and open from said air space into said duct during said second mode of operation.

4,552,206

HEAT SINKS FOR INTEGRATED CIRCUIT MODULES

Philip A. Johnson, Kingston, and Alfred F. McCarthy, Belmount, both of N.H., assignors to Aavid Engineering, Inc., Laconia, N.H.

Filed Jan. 17, 1983, Ser. No. 458,322
Int. Cl.⁴ H01L *23/02*
U.S. Cl. 165—80.3 **1 Claim**



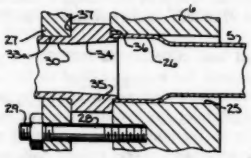
1. One-piece heat-sink apparatus for a dual-in-line pin (DIP) electronics package the body of which has the general form of a thin elongated rectangular parallepiped with pin terminals depending from opposite sides thereof, comprising a first elongated thin and flat sheet-metal heat-transfer clasp element proportioned to abut closely and substantially coextensively directly under and against the lower surface of the package, said first clasp element being no wider than the body of the electronics package and thereby allowing dual-in-line pin terminals of the body to project downwardly therefrom without interference from said first clasp element, a second elongated heat-transfer clasp element of the same thin sheet metal disposed in substantially parallel spaced alignment with said first clasp element for direct engagement with the upper surface of the package, a third elongated heat-radiating element of the same sheet metal disposed in spaced substantially parallel and coextensive alignment with said first and second clasp elements and having heat-radiating projections exposed to the ambient atmosphere for release of heat thereto, first connection means integral with one end of each of said first clasp element and third heat-radiating element and holding said first clasp elements in spaced substantially parallel alignment with one side of said third heat-radiating element at a first distance therefrom, and second connection means integral with one end of said second clasp element and the end of said third heat-radiating element opposite the said one end thereof and holding said second clasp element and third heat-radiating element in a spaced substantially parallel alignment with said one side of said third heat-radiating element at a second distance therefrom which is less than said first distance, said first and second clasp elements having their free ends extending in opposite directions from their integral cantilevered connections with said third heat-radiating element by way of said first and second connection means, whereby the body of such a package may be admitted into the space between the free end of said first clasp element and the nearby second clasp-element and slid into a nested position therebetween, with the downwardly-projecting pin terminals of the body straddling said first clasp element, for conduction of its internally-generated heat independently and directly through said end connection means to said third heat-radiating element for convective dissipation therefrom.

4,552,207

BASKET RETAINER FOR HEAT EXCHANGER TUBE CLEANING ELEMENT

Walter J. Baron, Milwaukee, and Laird C. Cleaver, Mequon, both of Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Continuation of Ser. No. 350,286, Feb. 18, 1982, Pat. No. 4,398,592. This application Jun. 16, 1983, Ser. No. 505,077
Int. Cl.⁴ F28G *1/12, 15/02*
U.S. Cl. 165—95 **9 Claims**



1. In combination in a heat exchanger having a housing, and having a plurality of longitudinally extending fluid flow tubes disposed within said housing, and having tube sheets disposed within said housing and with said tube sheets having openings in communication with the ends of said tubes, and further having longitudinally extending baskets for receiving shuttling tube cleaning elements connected in telescoping relationship to the ends of said tubes:

(a) a retaining plate fixedly disposed adjacent to the outer face of said tube sheet,

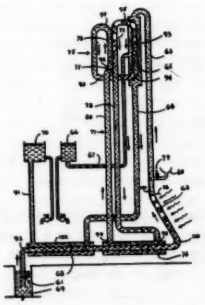
(b) and means, including said retaining plate, mounting a said basket in fixed relationship to said tube sheet and to an end of a said tube.

4,552,208

HEAT ACTUATED SYSTEM FOR CIRCULATING HEAT TRANSFER FLUIDS

Wilfred Sorensen, 26 Center St., Kingston, Ontario, Canada (K7L 4E6)

Filed Jun. 22, 1981, Ser. No. 275,917
Claims priority, application Canada, Jun. 26, 1980, 354,838
Int. Cl.⁴ F28D *15/00;* F24J *3/02*
U.S. Cl. 165—104.22 **3 Claims**



1. Apparatus for autogenously circulating heat transfer liquids from a heat collector to a heat exchanger located at a level below that of the heat collector, comprising:

(a) a collector **93** comprising a plurality of fluid passage means, for a fluid to be vaporized at least partially therein by a heat source **65**, inclined upwardly from a lower inlet **94** toward an upper outlet **95** thereof;

(b) means **73** for condensing vapour in said fluid passage means **72** located adjacent said upper outlet of said collector, sur-

rounding said fluid passage means, and having an inlet **96** and an outlet **97**;

(c) heat exchanger means **74**, at a level below said collector, having an inlet **98** and an outlet **99** thereto;

(d) first conduit means **78** providing a fluid flowpath between said fluid passage means and said inlet **98** to said heat exchanger means;

(e) second conduit means **80** providing a fluid flowpath between the outlet **99** of said heat exchanger means and the inlet **96** of said condenser;

(f) third conduit means **90** providing a fluid flowpath between the outlet **97** of said condenser and the inlet **94** to said collector;

(g) a second heat collector **62** including a plurality of fluid passage means, for a second fluid to be vaporized at least partially therein by a second heat source, inclined upwardly from a lower inlet **100** toward an upper outlet **101** thereof, and means **65** for condensing vapour of said second fluid above the upper end of said second collector, said condensing means providing the first said heat source for heating said fluid;

(h) conduit means **67** to convey at least a portion of condensed said second fluid to a hot storage means **66**;

(i) conduit means **91** to convey at least a portion of condensed said second fluid to a cold fluid storage means **70**; and

(j) fluid passage means between said inlet to second collector means and a source of said second fluid located at a level below said second collector in heat relationship to said heat exchange means, to draw said second fluid into said second collector as vaporization occurs in said second collector.

4,552,209

ARRANGEMENT OF DISCRETE STRUCTURAL PARTS, ESPECIALLY HEAT EXCHANGER

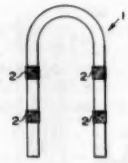
Georg Breitmoser, Groebenzell, and Wilhelm Vogel, Aystetten, both of Fed. Rep. of Germany, assignors to MTU-Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 522,642, Aug. 11, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 716,507

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230377

Int. Cl.[4] **F28F** *19/02*

U.S. Cl. 165—133 **5 Claims**



1. A heat exchanger, comprising a plurality of parallel tubes each having a given tube length and arranged in a package, each of said tubes comprising at least one sprayed-on spacer collar made of a metal or ceramic powder, each spacer collar having a collar length which is substantially shorter than said given tube length for covering only a portion of said given tube length for leaving the tube length outside said spacer collar free, all of said sprayed-on spacer collars of all tubes being located to substantially face each other, said neighboring spacer collars directly contacting each other, said spacer collars having a thickness which together with said collar length forms gaps along said tube length outside said spacer collars and between said tubes forming said package whereby one fluid can pass through the tubes and another fluid can pass through said gaps.

4,552,210

DEVICE FOR PRODUCING STEAM BY HEAT EXCHANGE BETWEEN A HEAT-TRANSFER LIQUID METAL AND FEED WATER

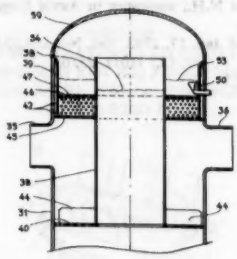
Claude Malaval, Antony, France, assignor to Novatome, Le Plessis Robinson, France

Filed Oct. 29, 1982, Ser. No. 437,642

Claims priority, application France, Dec. 18, 1981, 81 23667

Int. Cl.[4] **F28F** *19/00*

U.S. Cl. 165—134.1 **3 Claims**



1. A device for producing steam by heat exchange between a heat-transfer liquid metal and feed water, comprising an elongate cylindrical casing **(31)** disposed with its axis vertical, closed top and bottom by an upper end **(59)** and a lower end respectively, said casing receiving liquid metal in its upper part through at least one nozzle **(35, 36)** traversing said casing **(31)** and emerging in a space bounded by a central sleeve **(38)** coaxial with said casing and extending a certain distance above and below said at least one liquid metal entry nozzle **(35, 36)** and by a lower perforated annular plate **(40)** situated between said casing **(31)** and said central sleeve **(38)** and at the lower part of said sleeve, in such manner that an upper level of liquid metal **(53, 54)** is maintained above said at least one nozzle **(35, 36)**, inert gas filling a space existing between said level of liquid metal **(53, 54)** and said upper end **(59)** of said casing **(31)** and that circulation of liquid metal is established in said casing **(31)**, in contact with a bundle of tubes in which circulates the feed water which is being vaporized, said bundle of tubes being situated below the space where said liquid metal enters, said liquid metal leaving said casing **(31)** at its lower part, a peripheral sleeve **(39)** within the upper part of said casing **(31)** being fastened on said casing **(31)** and arranged coaxially at a short distance therefrom above said liquid metal entry nozzle **(35, 36)**, two annular perforated plates **(45, 46)** being fastened between said central sleeve **(38)** and said peripheral sleeve **(39)** above said liquid metal entry nozzle **(35, 36)**, spaced according to the height of said casing **(31)** and separated by vertical perforated crosspieces **(47)**, the perforations in said annular plates **(45, 46)** and said lower plate **(40)** being of substantially equal diameter and disposed in each of said plates **(45, 46, 40)** so as to be in vertical alignment with corresponding perforations in the others of said plates.

4,552,211

HEAT EXCHANGER WITH CONVECTION SUPPRESSING LONGITUDINAL BAFFLES

Max Weber, Wiesendangen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 18, 1983, Ser. No. 486,064

Claims priority, application Switzerland, Apr. 22, 1982, 2444/82

Int. Cl.[4] **F28D** *7/02, 7/10;* **F28F** *9/22*

U.S. Cl. 165—160 **9 Claims**

1. In a heat exchanger, the combination comprising

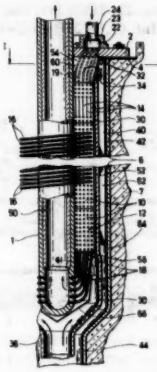
a vertical central tube;

a jacket concentric to said tube to define a first annular space therebetween;

a plurality of support plates extending coaxially and radially from said central tube to said jacket to sub-divide said annular space into a plurality of parallel flow paths for a first flowable medium;

a plurality of heat exchanger tubes extending between said central tube and said jacket within said flow paths to convey a second flowable medium therethrough for delivery to said central tube;

distributing means spaced from said support plates with an annular chamber therebetween and connected to said



tubes at one end thereof to deliver the second flowable medium thereto;

a plurality of separating plates extending through said annular chamber each separating plate extending coplanar with a respective support plate and extending from said support plates to said distributing means to define continuations of said flow paths throughout the annular chamber so as to prevent a circular flow; and

outlet means in said jacket adjacent said distributing means to exhaust the first flowable medium from said flow paths.

4,552,212

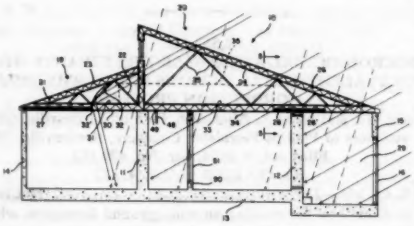
STRUCTURE HEATING AND COOLING SYSTEM

David A. Nuttle, 1316 Ravenhurst Dr., Raleigh, N.C. 27609

Filed Jan. 16, 1984, Ser. No. 570,851

Int. Cl.[4] B60H *1/00*

U.S. Cl. 165—48.2 **6 Claims**



1. An improved heating and cooling system comprising: a structure having at least one interior thermal storage wall, a plurality of interior partition walls, a floor, a ceiling, and a roof; at least a portion of said thermal storage wall being constructed of a relatively high density material capable of storing alternately relatively large amounts of positive and negative BTU's; at least a portion of said partition walls being constructed of a solar transmissive material; at least a portion of said floor being constructed from a relatively high density material capable of storing alternately relatively large amounts of positive and negative BTU's; at least a portion of said ceiling having an opening therein with an openable closure operatively associated therewith; means associated with said openable closure for reflecting solar energy onto portions of said high density wall and floor not otherwise in a position to passively receive solar energy; a relatively transparent glazing covering said ceiling opening; and at least a portion of said roof having an equatorial exposure with relatively transparent glazing forming the cover thereof whereby when it is desired to passively collect solar energy, the closure over said ceiling opening can be opened to allow solar energy to pass through said roof, through said ceiling, and to be stored in said high density wall and floor.

4,552,213

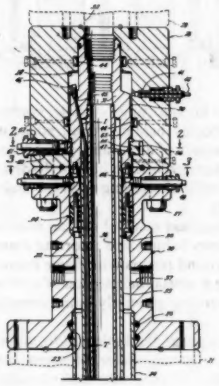
WELLHEAD APPARATUS

Jerry K. Boyd, Tomball, and Yu C. Chang, Houston, both of Tex., assignors to FIP, Inc., Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 585,440

Int. Cl.[4] E21B *23/00, 33/03*

U.S. Cl. 166—88 **20 Claims**



1. Wellhead apparatus, comprising a tubing head adapted to be mounted on a casing head, said head having a bore therethrough with a seat in the bore, an adapter adapted to be mounted on and releasably connected to the tubing head, said adapter having a bore therethough whose lower end is aligned with the bore of the tubing head above the seat, when so connected, a coupling disposable within the bore of the adapter, said coupling having a bore therethrough which is aligned with the upper end of the bore of the adapter, when so disposed, a casing suspended from the coupling in alignment with the coupling bore and extending therefrom within the tubing head, a tubing suspended from the coupling within the casing in alignment with the coupling bore and extending therefrom below the casing and spaced therefrom to provide an annular space therebetween, an assembly adapted to be disposed about the casing and supported on the seat in the bore of the head for sealing between the casing and the head, said adapter having an opening into its bore for connection with an external source of hydraulic fluid, means including seal means about the bore of the adapter for sealing between the adapter and the coupling and a port in the coupling for connecting the opening with the annular space, and means for transmitting hydraulic fluid through said space to and from hydraulically operable means within the well, said coupling having a groove thereabout, and said adapter having a plurality of supporting dogs mounted thereon for movement into and out of the groove, whereby with the dogs in the groove, and the adapter released from the tubing head, the coupling is supported from

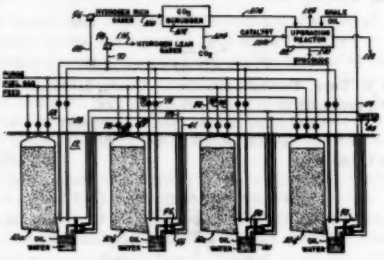
the adapter to permit the casing and tubing strings to be raised therewith.

4,552,214

PULSED IN SITU RETORTING IN AN ARRAY OF OIL SHALE RETORTS

John M. Forgac, Elmhurst, and George R. Hoekstra, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Mar. 22, 1984, Ser. No. 592,378
Int. Cl.[4] E21B *43/247*; C10B *57/20*
U.S. Cl. 166—259 **27 Claims**



1. A process for retorting oil shale, comprising the steps of:
(a) simultaneously heating rubblized masses of oil shale in retorting zones of a plurality of underground retorts to a retorting temperature to liberate hydrocarbons and water from said oil shale leaving retorted shale containing residual carbon;
(b) combusting said residual carbon in said oil shale in combustion zones behind said retorting zones in said plurality of underground retorts with flame fronts fed by a feed gas to provide a substantial portion of said heating, said flame fronts advancing generally in the direction of flow of said feed gas;
(c) injecting a purge fluid selected from the group consisting essentially of steam, water, nitrogen, carbon dioxide, and combinations thereof, into said plurality of underground retorts to quench said flame fronts and subsequently reigniting said flame fronts with said feed gas while continuing to liberate hydrocarbons and water in said retorting zone;
(d) step (b) being performed in at least one of said underground retorts at a time when step (c) is performed in at least one other of said underground retorts; and
(e) withdrawing said liberated hydrocarbons and water from said underground retorts.

4,552,215

METHOD OF GRAVEL PACKING A WELL

Stephen W. Almond, Ventura, Calif., and Ronald E. Himes, Rush Springs, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 26, 1984, Ser. No. 654,818
Int. Cl.[4] E21B *43/04*
U.S. Cl. 166—278 **20 Claims**

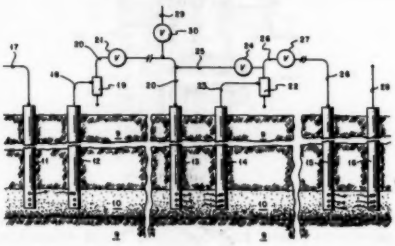
1. A method for gravel packing a highly deviated well bore penetrating a subterranean formation comprising:
preparing a gravel packing fluid by admixing an aqueous liquid, a gelling agent comprising a cellulose ether which is chemically modified to incorporate pendent vicinal dihydroxy groups in an amount sufficient to provide a DS of about 0.3 to about 1.3 and exhibits shear-thermal stability at a temperature in excess of 200° F., said gelling agent being present in an amount in excess of about 0.2 percent by weight of said aqueous liquid, a crosslinking agent comprising a zirconium IV-containing compound present in an amount of at least about 0.001 percent by weight of said aqueous liquid and a particulate agent;
introducing said gravel packing fluid into a subterranean formation through said highly deviated well bore; and
depositing said particulate agent within said well bore to form a permeable pack.

4,552,216

METHOD OF PRODUCING A STRATIFIED VISCOUS OIL RESERVOIR

Robert Wilson, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 21, 1984, Ser. No. 623,256
Int. Cl.[4] E21B *43/243*
U.S. Cl. 166—261 **12 Claims**



1. In a method of producing oil from a viscous oil-bearing subsurface reservoir, said reservoir being stratified by permeability variations and being penetrated at spaced points by a first injection well and a first producing well and being penetrated by a second injection well and a second producing well, said first injection and producing wells being located to penetrate a first part of said reservoir and said second injection and producing wells being located to penetrate a second part of said reservoir, said first and said second parts of said reservoir being spaced laterally from each other, said method comprising initiating combustion in said reservoir at a point adjacent said first injection well and injecting into said first injection well a combustion supporting free oxygen containing gas characterized by the fact that the products of combustion contain essentially nitrogen-free carbon dioxide, producing said carbon dioxide from said reservoir through said first producing well, injecting said carbon dioxide into said second injection well, and producing oil from said reservoir through said second producing well.

4,552,217

MICROBIOCIDAL ANIONIC SEQUESTERANTS WITH POLYVALENT METAL CATIONS FOR PERMEABILITY CORRECTION PROCESS

Yulin Wu, and Naim A. Mumallah, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 9, 1984, Ser. No. 629,153
Int. Cl.[4] E21B *33/138*, *43/22*
U.S. Cl. 166—270 **19 Claims**

1. A method for treating an underground formation which comprises injecting effective permeability control proportions of an in situ gelable composition comprising effective ratios of:
(a) water,
(b) at least one polymer capable of gelling with a crosslinking agent within a gelation pH range,
(c) at least one crosslinking agent comprised of polyvalent metal cations, and
(d) at least one sequestering agent characterized as biocidal and
wherein said polyvalent metal cations are sequestered by said sequestering agent.

4,552,218

UNLOADING INJECTION CONTROL VALVE

Richard J. Ross, and David J. Speller, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Sep. 26, 1983, Ser. No. 535,409
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—319 **9 Claims**

1. Fluid pressure responsive valving apparatus for use with an annular downhole tool having a packing element responsive to a pressure differential between the bore of the tool and the surrounding annulus within the well bore, comprising: a tubular assembly connectable in series relation between a surface-connected well conduit and the downhole tool; plug means for closing said tubular assembly to prevent the passage of fluids in either direction therepast and for permitting fluid pressure within said tubular assembly to be increased; a valve mounted in said tubular assembly and shiftable between first and second positions in response to increased fluid pressure within said tubular assembly; said valve in said first position connecting the bore of said tubular assembly to the annulus; resilient means urging said valve to said first position; said valve in said second position directing conduit fluid pressure into the bore of the downhole tool to expand the packing element thereof; and means responsive to the conduit fluid pressure changes for shifting said valve to said second position against the bias of said resilient means.

4,552,219

SUBSURFACE SAFETY VALVE

Fred S. Wong, Houston, and Larry F. Grohman, Spring, both of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Oct. 5, 1983, Ser. No. 539,333
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—321 **8 Claims**

1. A subsurface safety valve for use in controlling flow in a well conduit providing a desired fluid flow path in the well, including:

a valve housing having means for connecting said valve housing in a well conduit providing the desired fluid flow path, said valve housing having a flow passage formed therethrough which communicates with the well conduit when connected therewith to form a portion of the well conduit at a desired subsurface location in the well;

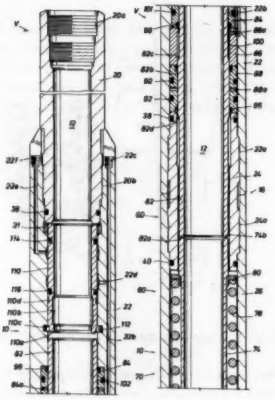
flow closure means disposed in said flow passage for movement to and from a closed position for blocking flow of fluid through said flow passage and an open position for enabling flow of fluid through said flow passage;

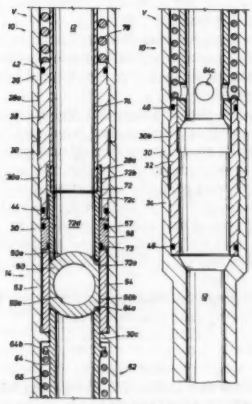
operator means mounted with said housing for moving said flow closure means longitudinally in said flow passage to and from the open and closed positions; and

said flow closure means including:

a ball-type flow closure element having a flow enabling port extending therethrough which when aligned with said flow passage enables desired flow and when said port is disposed out of communication with said flow passage, said ball-type flow closure element blocks flow through said flow passage, said ball-type flow closure element having a pair of parallel flats formed thereon, said flow enabling port forming a longitudinal axis that is disposed between and parallel to said flats;

a pair of ball-type flow closure element operating retainers fixedly secured in said flow passage, one of said retainers positioned adjacent one of said parallel flats and the other of said retainers positioned adjacent the other of said parallel flats;





at least one of said adjacent operating retainers and flats having a first co-acting means for rotating said ball-type flow closure element to and from the open and closed position in response to relative longitudinal movement of said ball-type flow closure element relative to said operator guides a prearranged longitudinal distance; and

at least one of said adjacent operating retainers and one of said flats having a second co-acting means for maintaining said flow enabling port in the open position aligned with said flow passage during longitudinal movement of said ball-type flow closure element greater than the

prearranged longitudinal distance required to effect rotation to the open position.

4,552,220

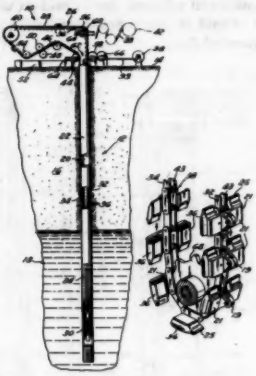
OIL WELL EVACUATION SYSTEM

Brian D. Jones, 1795 Huntington St., Riverside, Calif. 92504

Filed Feb. 3, 1984, Ser. No. 576,970

Int. Cl.[4] E21B *43/00*

U.S. Cl. 166—369 **32 Claims**



16. An article for use in a cylindrical oil well bore, comprising:

a container having a normally open top opening for filling said container and a normally closed bottom opening that opens and releases the contents of said container when said container is compressed; and

a portion of said container conforming to the curvature of the inside of said bore for scraping accumulated material from the inside of said bore.

30. A system for enhancing the production of oil from an oil well by evacuating sand, paraffin and other solid matter therefrom, said well having a well bore surrounded by a well casing, the system comprising:

a station located at the well head for receiving and collecting said solids as well as oil produced from said well;

a downhole unit located inside said well casing near the bottom of said well to provide an anchor for said system;

an endless belt at least partially supporting said downhole unit at a predetermined depth in said well, said belt being driven between said station and said downhole unit;

means on said belt for simultaneously evacuating from said well said solids and said oil, thereby enhancing the production of said oil; and

means for excavating said solids to facilitate their accumulation and evacuation by said evacuation means.

4,552,221

DRY-HEAD OR DELUGE-TYPE VALVE FOR FIRE-EXTINGUISHING SYSTEMS

Wilfried Klein, Lindlarer Str. 79, 5063 Overath-Immekeppel, Fed. Rep. of Germany

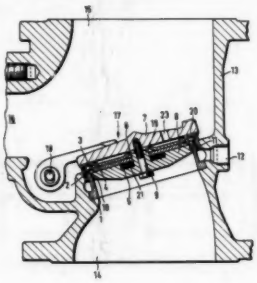
Filed Jul. 27, 1983, Ser. No. 517,544

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230086

Int. Cl.[4] A62C *37/06*

U.S. Cl. 169—22 **11 Claims**

1. In a dry or deluge-type valve for permanently installed fire-extinguishing systems, having a blocking element mounted in a valve housing with an inlet and outlet and which tightly blocks the open cross-section of the housing and locking and release means integrated into the valve, the improvement wherein the locking and release means comprises means forming at least one radial depression at the open cross-section of the valve mounting, at least one locking element engageable with the at least one depression to lock the blocking element in a blocking position and means for maintaining the locking element in the engaged position against the pressure of an extinguishing fluid in response to the pressure of a gas or mixture of gases exceeding a predetermined level which is weaker than the pressure of the extinguishing fluid, wherein the blocking element comprises two disk-shaped elements rigidly fastened together, one of which is an air flap configured to at least partly engage an adjacent face of the open cross-section of the housing along its total circumference and the other



of which is a water disk configured to be positioned inside the open cross-section housing and completely span same when the blocking element is in the blocking position, wherein one part of the water disk has a central projection and an annular depression that surrounds the projection on the side that faces the air flap, a closure plate mounted for axial displacement on the central projection and a compression spring in the annular depression, and wherein the central projection and the edge of the open cross-section of the housing, the closure plate and the air flap form an annular space and wherein the annular space communicates with the part of the housing that faces the air flap through at least one hole in the air flap.

4,552,222

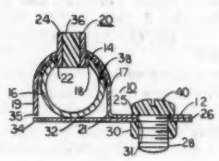
FUSIBLE-ELEMENTS HOLDER BRACKET DEVICE

Kip B. Goans, 2576 Appolo Ave., and Ruel R. Gober, Jr., 3525 Lake Catherine Dr., both of Harvey, La. 70058

Filed Aug. 29, 1984, Ser. No. 645,330

Int. Cl.[4] A62C *37/12*

U.S. Cl. 169—57 **11 Claims**



1. In a fire protection system having a monitoring pressure fluid line for holding deactivated activating means of a fire control safety system, a fusible elements holder bracket device for venting fluid pressure in said line to atmosphere at a preselected rise in temperature to activate said system, comprising:

(a) a body means integral with a hollow open ended cylinder means, said body means being flat in part for attaching to supporting structure, and sequentially curved upwardly in part to an apex and down for estending partially around said pressure fluid line, and said hollow open ended cylinder means being normal to said upward curve and apex

and extending therebelow and above respectively into said pressure fluid line side opening and to atmosphere;

(b) a plurality of connecting means for attaching said means flat part to said supporting structure and to said pressure fluid line with said lower end of said cylinder means extending through said side opening into said line; and

(c) a plurality of fusible element means, one said means mounted in said hollow open ended cylinder means for closing said ends, second said means mounted between said body means curved part and said pressure fluid line for sealing said one connection of said cylinder end in said line, and a third said means mounted as part of said connecting means for attaching said body means to to said supporting structure, and all for melting at a preselected temperature.

4,552,223

SOIL CULTIVATING IMPLEMENTS

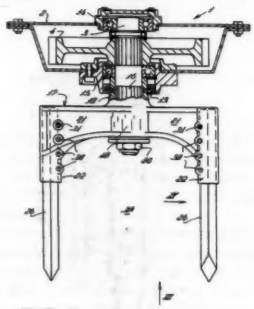
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed May 24, 1983, Ser. No. 497,552

Claims priority, application Netherlands, May 26, 1982, 8202143

Int. Cl.⁴ A01B *33/06*

U.S. Cl. 172—49.5 **10 Claims**



1. A soil working member which rotates about a substantially vertical axis to work the underlying soil, the soil working member comprising a tine holder for holding a tine at a distance spaced from its corresponding axis that penetrates a substantial distance into the soil while at the same time it is rotated about said axis, said tine holder comprising a substantially vertically disposed sleeve, said sleeve having a hollow interior for receiving said tine, said sleeve between its exterior and its hollow interior being thicker along its leading edge than along its trailing edge relative to its usual direction of rotation, said tine holder being substantially U-shaped when seen in vertical cross section, the limbs of the U being directed forwardly with respect to the intended direction of operative rotation of the soil working member of which said holder forms a part.

4,552,224

HITCH ASSEMBLY FOR A TANDEM DISC IMPLEMENT

Terry Luscombe, P.O. Box 108, Armstrong, Iowa 50514

Filed Mar. 19, 1984, Ser. No. 590,735

Int. Cl.⁴ A01B *69/00*; B60D *1/14*

U.S. Cl. 172—324 **2 Claims**

1. A multiple tandem plow implement connectable to a tractor to be towed thereby, comprising:

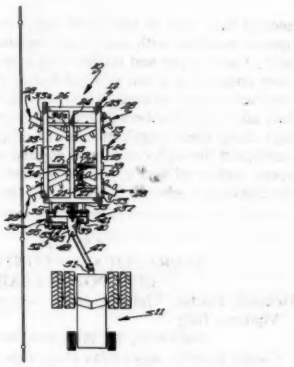
an elongate, generally rectangular-shaped implement frame extending in a fore and aft direction;

a plurality of gangs of disc plows mounted on said frame, including a front pair of gangs and a rear pair of gangs, each frong gang being oppositely angled with respect to a gang positioned directly rearwardly thereof;

a pair of vertically shiftable ground engaging wheels mounted on said frame and being shiftable between working and travel positions, said ground engaging wheels when in the travel position elevating the gangs of plows above the surface of the ground and when in the working position allowing plows to penetrate the ground;

an elongate generally rectangular-shaped hitch frame positioned forwardly of and below said implement frame and extending transversely and substantially normal to the direction of travel, means pivotally connecting said hitch frame with the front end of said implement frame to permit vertical pivotal movement between the hitch frame and implement frame about a horizontal axis extending normal to the direction of travel, a pair of substantially flat vertically spaced apart substantially parallel plates secured to said hitch frame and projecting forwardly therefrom;

an elongate draw bar extending in a fore and aft direction and having means at its forward end for pivotal connection with a tractor, said draw bar having a rear end portion positioned between said plates, pivot means adjacent the rear end of said draw bar pivotally connecting the



draw bar to said plates to permit lateral shifting of the draw bar about a vertical axis relative to the hitch frame;

a horizontally disposed double-acting horizontal ram positioned forwardly of said hitch frame and being extendable and retractable, pivot means pivotally connecting one end of said hydraulic ram to one end of said hitch frame for pivoting movement of the hydraulic ram relative to the hitch frame about a vertical axis, pivot means pivotally connecting the other end of said hydraulic ram to the rear end of the draw bar to permit various and selected power shifting of the rear end of the draw bar laterally with respect to the hitch frame in opposite directions between a neutral position and offset position, said draw bar when in the neutral position being disposed in the longitudinal center line of the implement frame to permit trailing the latter substantially in a line with a tractor, said draw bar when in an offset position being angled with respect to the longitudinal center line of the implement frame to permit the implement frame to travel in offset relation thereto, said hydraulic ram being operable to retain the draw bar in an adjusted neutral or offset position.

4,552,225

CULTIVATOR SHIELD ATTACHMENT

Ernest E. Behn, and Jerome L. Behn, both of R.R. #1, Boone, Iowa 50036

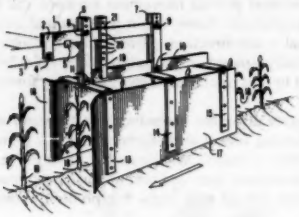
Filed Oct. 28, 1983, Ser. No. 546,281

Int. Cl.⁴ A01B *39/26*

U.S. Cl. 172—513 **4 Claims**

1. A support bracket for mounting a shield on a cultivator

frame, said bracket comprising an upper elongated support bar having an adapter member rigidly secured at one end, said adapter member being constructed to be fixedly secured to a cultivator frame member with said upper bar extending substantially horizontal in a rearward direction, a second elongated bar rigidly mounted on the upper portion of a shield member, said second bar being positioned below and generally parallel with said upper bar, a pair of longitudinally spaced parallel links pivotally attached at their ends to said upper and



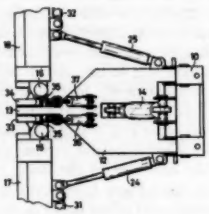
second bar, each of said links comprising a pair of laterally spaced members with one of said members positioned on each side of said upper and second bar, a height adjusting mechanism comprising a pair of rigid laterally spaced vertical strap members rigidly secured to said second bar and straddling said bar, said strap members including a plurality of aligned openings along their length, pin means adapted to be selectively positioned through one of said aligned openings and abut the upper surface of said upper bar whereby to floatingly secure the shield at a selected height above the ground.

4,552,226

HYDRAULICALLY CONTROLLED BULLDOZER-BLADE

Helmuth Platter, Vipiteno, Italy, assignor to Leitner S.p.A., Vipiteno, Italy

Filed Mar. 29, 1984, Ser. No. 594,918
Claims priority, application Italy, Apr. 1, 1983, 20448 A/83
Int. Cl.[4] E02F *3/76*
U.S. Cl. 172—815 **2 Claims**



1. A hydraulically controlled bulldozer-blade attachment for an endless track tractor, comprising:

a supporting frame securable to a tractor;

a first intermediate frame pivotally connected to said supporting frame about a first horizontal axis extending transverse to a direction of advance of said tractor;

a first double acting hydraulic jack connected between said supporting frame and said first intermediate frame for controlling an inclination of said first intermediate frame about said first axis; two second intermediate frames, each said second intermediate frame being pivotally connected to said first intermediate frame about a respective second horizontal axis extending transverse to a direction of advance of said tractor;

a second double acting hydraulic jack connected between said first intermediate frame and each said second intermediate frame for independently controlling inclinations of said second intermediate frames about said second axes;

a half blade pivotally connected to each said second intermediate frame about a respective third axis, each said third axis extending parallel to a first vertical plane extending in said direction of advance of said tractor, each said third axis being adjustable relative to a second vertical plane extending transverse to said direction of advance by one of said second jacks, said second jacks being adapted such that said third axes are rearwardly inclined to said second vertical plane; and

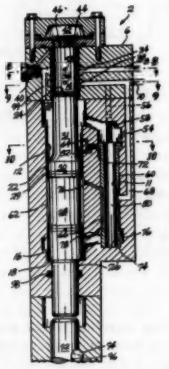
a third double acting hydraulic jack connected between said second intermediate frame and each of said half blades for controlling inclinations of said half blades about said third axes.

4,552,227

RECIPROCATING LINEAR FLUID MOTOR

Maurice Wohlwend, Seattle, Wash., assignor to The Stanley Works, New Britain, Conn.

Division of Ser. No. 331,650, Dec. 17, 1981, Pat. No. 4,466,493.
This application Aug. 16, 1984, Ser. No. 641,720
Int. Cl.[4] F01B *25/04*; F01L *25/04*
U.S. Cl. 173—15 **17 Claims**



1. In a motor of a type including a housing having a longitudinal cavity, and a linear piston which reciprocates in said cavity and which is driven by drive means in one direction toward a lower position and against a load and is moved in the opposite direction by a hydraulic system having a fluid inlet and a fluid outlet; said drive means including a body of incompressible fluid which is partially defined by an end portion of said cavity and which acts on and transmits a driving force to the piston, and spring means in pressure communication with said body:

stop means for automatically shutting off the motor when the load is removed from the piston; which stop means includes slide means for allowing the piston to slide past said lower position and into a shut-off position when the load is removed from the piston, and passageway means for short-circuiting hydraulic fluid pressure from the fluid inlet directly to the fluid outlet; said passageway means including a first end that is in open communication with the fluid inlet and that has an inlet opening ported on said end portion of the longitudinal cavity, and a second end that is in open communication with the fluid outlet and that has an outlet opening ported on said end portion of the longitudinal cavity; said inlet opening and said outlet opening being blocked from communication with each other by the piston when the motor is operating and in open communication with each other via the body of incompressible fluid when the piston is in its shut-off

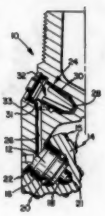
position; each of said openings being blocked by a side portion of the piston for at least a portion of the time the motor is operating to allow movement of the piston in said opposite direction to compress the spring means; and said outlet opening communicating with said body of fluid when the piston is in said lower position to prevent the drive means from exerting any driving force on the piston in said one direction.

4,552,228

LOW PRESSURE DIFFERENTIAL COMPENSATOR

Robert F. Evans, Dallas, and Charles W. Stafford, Arlington, both of Tex., assignors to Varel Mfg. Co., Dallas, Tex.

Filed Feb. 21, 1984, Ser. No. 581,612
Int. Cl.[4] E21B *10/24*
U.S. Cl. 175—228 **8 Claims**



4. A low pressure differential compensator for use in a sealed rotary rock bit having a lubrication system including a lubricant reservoir, the reservoir providing lubricant to a bearing area between relatively rotatable elements having a seal therebetween, comprising:

a flexible elongated diaphragm of a truncated cone configuration where the walls of the cone have opposed longitudinally extending linear crests, each crest having opposed sloping surfaces, each surface joining the sloping surface of the adjoining crest to form an undulatory cross section,

said diaphragm located within said lubricant reservoir for separating said reservoir into a lubricant region and a borehole fluid region, said diaphragm expanding radially with respect to the longitudinal axis of said reservoir in response to a pressure differential across said seal.

4,552,229

EXTERNALLY POWERED CORE CATCHER

Steven R. Radford, West Jordan, and Craig R. Hyland, Magna, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

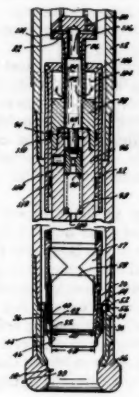
Filed Sep. 9, 1983, Ser. No. 530,520
Int. Cl.[4] E21B *25/12*
U.S. Cl. 175—240 **18 Claims**

1. An apparatus used in combination with a coring bit connected to an outer tube for retention of a core, said core being cut by said coring bit and disposed within an inner tube disposed in turn within said outer tube, an external force being selectively applied to said inner tube, said apparatus comprising:

a slidable core catcher disposed within said inner tube and longitudinally displaceable with respect to said inner tube, said core being disposed through said core catcher;

an inner tube ring member coupled to said slidable core catcher and selectably detachable therefrom, said inner tube ring member longitudinally translatable with respect to said outer tube; and

an outer tube ring member coupled to said outer tube and longitudinally fixed thereto, said outer tube ring member extending radially inwardly from said outer tube to assume a longitudinal position opposing said inner tube ring member when said inner tube ring member is adjacently disposed to said outer tube ring member, longitudinal movement of said inner tube with respect to said outer tube thereby causing longitudinal displacement of said slidable core catcher within said inner tube by virtue of said coupling between said inner tube ring member and core catcher when longitudinal movement of said inner tube ring member is restrained by said outer tube ring member, said inner tube ring member being particularly



characterized by selectively detaching from said slidable core catcher after a predetermined amount of relative longitudinal displacement between said inner tube and said slidable core catcher,

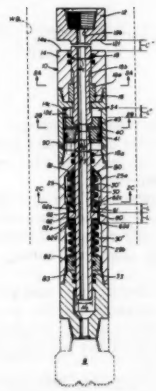
whereby said slidable core catcher is operative by said external force applied to said inner tube and not dependent upon contact and coupling with said core disposed through said core catcher into said inner tube.

4,552,230

DRILL STRING SHOCK ABSORBER

Edwin A. Anderson, and Derrel D. Webb, both of P.O. Box 567, Houston, Tex. 77001

Filed Apr. 10, 1984, Ser. No. 598,703
Int. Cl.[4] E21B *17/07*
U.S. Cl. 175—321 **18 Claims**



1. In a shock absorber for use in a well drilling string in a well bore having a drilling jar formed by inner and outer members with up and down jar impact faces engageable to

engage and deliver an up or down jar impact to the well string when it is stuck and wherein the shock absorber includes an elongated telescopic structure having an inner tubular body and an outer housing with means for connecting the structure in a well drilling string for conducting drilling fluid therethrough, the structure further having rotary drive means between the body and the housing and resilient means engageable between the body and housing to cushion telescopic contraction and extension of the inner body and outer housing forming the structure, the invention including:

means to substantially neutralize the effect of well drilling fluid on the body;

seal means in longitudinally spaced relation between the body and housing to provide a liquid receiving chamber in which the resilient means is recieved;

extension and contraction stop shoulder means on the body and housing to limit longitudinal extension and contraction therebetween, said shoulder means being formed on the body and housing outside the liquid receiving chamber;

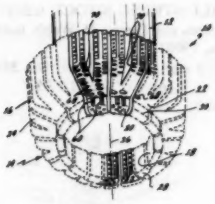
said extension stop shoulder means being longitudinally spaced on the body and housing to engage and prevent further extension of the body and housing before the up drilling jar impact faces engage to deliver an up jar by a pull on the well string, and said contraction stop shoulder means being spaced to engage and prevent further contraction of the body and housing before the down drilling jar impact faces engage to deliver a down jar by pushing on the well string so as to inhibit damage to the structure of the shock absorber during jarring blows to the stuck well string by the drilling jar.

4,552,231

ROTATING PILOT CORE BIT FOR USE IN HIGHLY FRACTURED FORMATIONS

Clifford R. Pay, Woods Cross, Utah, and F. James Thornton, Bakersfield, Calif., assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Sep. 6, 1983, Ser. No. 529,407
Int. Cl.[4] E21B *10/48*
U.S. Cl. 175—330 **3 Claims**



1. A rotating bit for coring including an inner gage of said bit defining a core diameter and an outer gage of said bit defining a bore diameter, said bit including a bit face having a longitudinal axis, said bit comprising:

a pilot portion extending from said inner gage in a radial direction and longitudinally extending from said bit face to form a generally cylindrical cutting section, said pilot portion having diamond cutting elements disposed therein;

a flank portion extending from said pilot nose portion, said flank portion characterized by a predetermined slope defined with respect to said longitudinal axis of said bit, said flank portion having diamond cutting elements disposed therein; and

a shoulder portion extending from said flank portion to said outer gage to smoothly join said flank portion to said outer gage, said shoulder portion having diamond cutting elements disposed therein,

wherein said flank portion joins said pilot portion through a smoothed transition surface, said transition surface having an exposed diamond cutting element disposed therein,

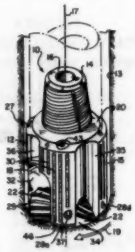
whereby a rotating bit for coring is devised which minimizes disturbance to said core while cutting and minimizes jamming of said core.

4,552,232

DRILL-BIT WITH FULL OFFSET CUTTER BODIES

Lawrence Frear, Sandy, Utah, assignor to Spiral Drilling Systems, Inc., Denver, Colo.

Filed Jun. 29, 1984, Ser. No. 626,237
Int. Cl.[4] E21B *10/10*
U.S. Cl. 175—337 **33 Claims**



1. A rotary drill bit for drilling in an earth formation which drill bit includes a main body structure, and at least one cutter body rotatably connected at each end thereof to the main body structure at an end support position at which end support position the cutter body is attached to the main body, said cutter body having a rotational axis perpendicular to and offset from a longitudinal axis of said drill bit, each of said end support positions being located on said rotational axis and equidistant from said longitudinal axis, said cutter body further having a generally ellipsoidal configuration with parallel rows of cutting elements formed on an outer surface thereof, said cutter body acting in the first abrasive mode of operation wherein the cutter body is moved in the direction of its rotational axis to abrade the earth formation and in a second abrasive mode of operation wherein said rows impart a rotation to said cutter bodies about their rotational axes to abrade said earth formation.

4,552,233

ROTARY DRILL BIT SEAL

Frank J. Klima, Virginia, Minn., assignor to Warren A. Sturm, Minneapolis, Minn.

Continuation of Ser. No. 431,397, Sep. 30, 1982, abandoned. This application Jul. 18, 1984, Ser. No. 632,255
Int. Cl.[4] E21B *10/24*
U.S. Cl. 175—371 **5 Claims**

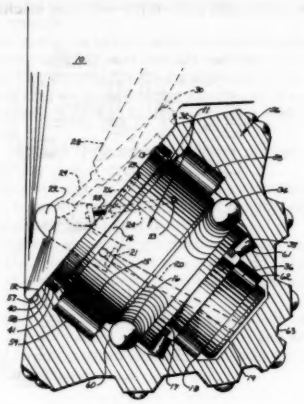
1. A seal for a rotary drill bit of the class including a journal and a cutter cone rotatably disposed on the journal comprising, in combination:

a stationary journal having a lower end and an upper end, said upper end having a radially extending portion including a surface for engagement with the axial end of a seal;

a hollow cutter cone rotatably disposed on said journal and including a radially extending upper end adjacent to the radially extending portion on the upper end of said journal and a seal receiving groove opening axially upwardly and radially inwardly on the upper end of the interior of said hollow cutter cone and adapted to receive a seal extending intermediate the lower portion of said groove and the radially extending porton of said stationary journal; and

a plurality of sealing rings, including first and second sealing rings formed of materials of dissimilar characteristics so

that one of said first and second rings is compressible and the other is incompressible axially in said seal receiving groove disposed axially in said seal receiving groove and intermediate the lower radially extending portion of said groove and the radially extending portion of said stationary journal whereby the circumferential outer surfaces of said sealing rings are in engagement with the groove in said cutter cone, the sealing rings are disposed in serial



axial engagement intermediate the radially extending portion on said stationary journal and the lower portion of the groove on said cutter cone and the inner circumferential portions of said rings are radially spaced from said stationary journal and said sealing rings are confined solely axially between the lower portion of said seal receiving groove and the radially extending portion on said stationary journal.

4,552,234

SPIRAL GUN APPARATUS

Lowell W. Revett, Youngsville, La., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 282,555, Jul. 13, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 585,955

Int. Cl.⁴ E21B *43/117*

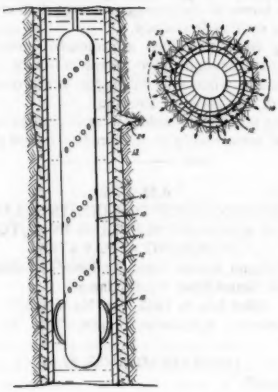
U.S. Cl. 175—4.6 **8 Claims**

1. Shaped charge gun perforating apparatus for use in perforating casing in a cased well borehole traversing earth formations comprising:

a hollow longitudinal elongated body member sized and adapted for passage through a cased well borehole and having a longitudinal axis and an outer circumferential surface;

means for maintaining said longitudinal axis of said body member approximately coincident with the longitudinal axis of the casing in a cased well borehole, thereby providing optimum standoff of said outer circumferential surface from the interior surface of the casing;

plural shaped charge perforating guns carried interiorly in said hollow body member and having firing apertures arranged on said outer circumferential surface of said body member and distributed longitudinally along the length of said body member, said firing apertures being generally circular in shape and having axes of rotation radially disposed with respect to said longitudinal axis of said body member, said shaped charge perforating guns being arranged to be substantially simultaneously fired to produce perforations through well casing along the circumference of the well casing, said shaped charge perforating guns being longitudinally distributed in a density of at least four such perforating guns per foot along said body member such that said firing apertures form on said exterior surface thereof a generally longitudinally spirally shaped pattern and wherein the azimuthal angles about said longitudinal axis of said body member formed by said radial axes of said firing apertures with each other are arranged such that over a maximum of a six foot longitudinal length of said body member said radial axes of said firing apertures form approximately 15° angles with respect to each other about said longitudinal axis of said



body member, the optimum standoff of said outer circumferential surface and the positioning of said radial axes of said firing apertures cooperatively interacting to provide at least 360° coverage of high azimuthal dispersion perforations produced in the circumference of a well casing over such a maximum of six foot longitudinal length, said perforations being no more than approximately 15° offset from each other over a given length not exceeding six feet.

4,552,235

CYCLICALLY WEIGHING BULK SOLID MATERIAL

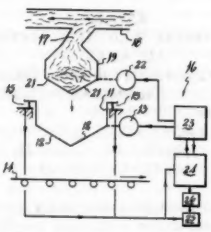
David Brunnschweiler, Blackburn, England, assignor to Haigh Chadwick Limited, West Yorkshire, England

Filed Apr. 21, 1983, Ser. No. 487,011

Claims priority, application United Kingdom, Apr. 21, 1982, 8211473

Int. Cl.⁴ G01G *19/52, 13/16, 13/24, 21/10*

U.S. Cl. 177—1 **9 Claims**



1. In a method for cyclically weighing flowable bulk solid material as part of a dispensing process comprising the steps of:

supplying said material from a continuously operating controllable delivery feed arrangement to a weigh-pan,

generating a signal indicative of the amount of material in the weigh-pan,

terminating supply of said material from said feed arrange-

ment when said signal indicates a predetermined amount of material in the weigh-pan,

causing the weigh-pan, after receiving and weighing all the material supplied by said feed arrangement up to the said termination of said supply, to deliver its contents, and

preparing the weigh-pan for the next cycle,

the improvement comprising:

predetermining a rate of delivery from said weigh-pan in accordance with the requirements of said dispensing process in terms of the average amount delivered per cycle and the cycling frequency,

supplying from said feed arrangement material to said weigh-pan through valve means in which said material accumulates when said weigh-pan is not receiving material from said valve means, and

controlling said controllable feed arrangement to supply said material substantially at said predetermined rate.

4,552,236

DISTRIBUTION TABLE FOR CONTROLLING FEED RATE OF ARTICLES SUPPLIED IN AUTOMATIC WEIGHING APPARATUS

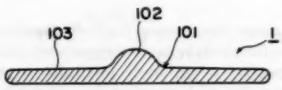
Yoshiharu Mikami, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 9, 1982, Ser. No. 416,323

Claims priority, application Japan, Sep. 10, 1981, 56-135111[U]

Int. Cl.⁴ G01G *19/22, 21/28*

U.S. Cl. 177—25 **2 Claims**



1. An apparatus for controlling the feed rate of articles in an automatic weighing apparatus, comprising:

a distribution table having an upper surface formed with a centrally located hemispherical projection and a flat portion surrounding the projection;

means, connected to said distribution table, for subjecting the distribution table to helical reciprocatory vibration; and

a plurality of radially extending, independently vibratable troughs disposed about the outer circumference of said distribution table for receiving articles distributed by the distribution table.

4,552,237

COMBINATORIAL WEIGHING METHOD AND APPARATUS

Takashi Saskiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jun. 17, 1983, Ser. No. 505,479

Claims priority, application Japan, Jun. 23, 1982, 57-107789

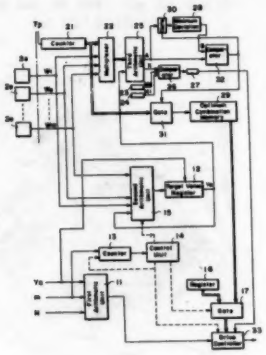
Int. Cl.⁴ G01G *19/22*

U.S. Cl. 177—25 **8 Claims**

1. A combinatorial weighing method for use in a combinatorial weighing apparatus for combining weight data obtained from a plurality of weighing machines to find a combination giving a total combined weight value equal or closest to a target weight value within a preset weight range and for discharging weighed batches of articles from the weighing machines providing the combination, the combinatorial weighing being performed for a case where the target weight value is greater than the maximum load of the weighing apparatus, said method comprising the steps of:

(a) computing an average weight value of batches of articles, which are to be charged into each of the weighing machines, based on a number of times m batches of articles, where m is an integer greater than or equal to one, are to be discharged from all of the plurality of weighing machines, the target weight value, and the total number of weighing machines;

(b) repeating, m times, a cycle of discharging the batches of articles from all of the weighing machines and supplying batches of articles, having substantially the average weight value, into each of the weighing machines;



(c) computing a difference between the target weight value and the total weight value of the batches of articles obtained after discharging the batches of articles from all of the weighing machines m times;

(d) selecting a combination of batches of articles, with the difference serving as the target weight value, contained in the weighing machines giving a total weight within the preset weight range inclusive of the target weight value; and

(e) discharging the selected batches of articles.

4,552,238

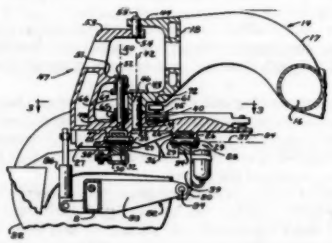
TRACTOR SCRAPER HITCH STEERING AND SUSPENSION SYSTEM

Hardin Joyce, Jr., Springfield, Ill., assignor to Fiatallis North America, Inc., Carol Stream, Ill.

Filed Sep. 26, 1983, Ser. No. 535,793

Int. Cl.⁴ B62D *5/10*; B60G *25/00*

U.S. Cl. 180—139 **15 Claims**



1. A vehicle steering and suspension system for use with an articulated vehicle having a tractor portion and a trailer portion coupled thereto by a hitch connection that permits the vehicle portions to rotate relative to each other about an articulation axis extending vertically through the tractor and trailer portions comprising;

a hitch base frame secured to a portion of the tractor and

having formed therein an aperture coincident with said articulation axis of the hitch connection,

structural means forming a part of and extending upwardly from said hitch frame means at a forward portion thereof,

said structural means including a bottom portion and a middle portion having formed therethrough apertures oriented to form a vertical common axis located forwardly of said articulation axis,

said structural means further including an upper portion having formed therethrough an aperture with an axis coincident with said articulation axis,

a draft frame connected to the trailer portion having a forward portion comprising a lower bracket member with an aperture formed therethrough with an axis coincident with said articulation axis, an upper bracket member with an aperture formed therethrough with an axis coincident with said articulation axis,

pin means disposed between said bottom portion and said middle portion of said structural means,

pin means disposed along said articulation axis connecting said hitch base frame and said lower bracket member of the draft frame for pivotal movement therebetween,

pin means disposed along said articulation axis connecting said upper portion of the structural means and said upper bracket member of the draft frame for pivotal movement therebetween, and

steering linkage means connected to said hitch base frame disposed to rotate about said common axis and effective to cause said tractor portion to rotate about said trailer portion a total of 180 degrees.

4,552,239

FOUR-WHEEL STEERING DEVICE FOR VEHICLE

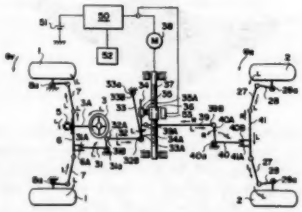
Hirotaka Kanazawa; Teruhiko Takatani, and Naoto Takata, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 25, 1983, Ser. No. 545,190

Claims priority, application Japan, Oct. 26, 1982, 57-188023; Oct. 28, 1982, 57-189446; Oct. 28, 1982, 57-189447

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—140 **13 Claims**



1. A four-wheel steering device for a vehicle comprising a front wheel steering mechanism for turning the front wheels, a rear wheel steering mechanism for turning the rear wheels, a vehicle speed sensor for detecting the vehicle speed and a controller for controlling the rear wheel steering mechanism characterized in that said controller controls the rear wheel steering mechanism so that the rear wheel turning angle is changed in accordance with a turning angle ratio characteristic curve defined on a $\theta F - \theta R$ plane wherein θF and θR respectively represent the front wheel turning angle and the rear wheel turning angle, said turning angle ratio characteristic curve being substantially a broken line having an inflection point at which the inclination thereof is changed, the turning angle ratio characteristic curve having a positive first inclination in the region where the value of θF is smaller than the value of θF at the inflection point and a second inclination smaller than the first inclination in the region where the value of θF is not smaller than the value of θF at the inflection point, and said turning angle ratio characteristic curve being changed according to the vehicle speed so that the turning angle ratio $\theta R/\theta F$ is increased as the vehicle speed increases.

4,552,240

POWER STEERING APPARATUS

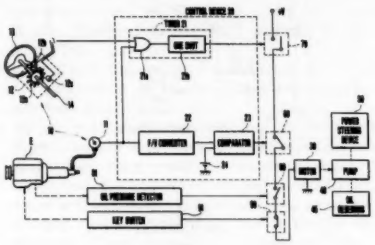
Sadao Takeshima, and Takeshi Ohe, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,278

Claims priority, application Japan, Feb. 14, 1983, 58-22551

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—142 **15 Claims**



1. In a power steering apparatus for use in a motor car of the type including a control device for controlling a motor driven oil pump in accordance with an output of a sensor device which detects running condition of said motor car driven by an engine, the improvement which comprises means for stopping said oil pump while said engine is stopped and means for stopping said oil pump during starting of said engine.

4,552,241

FOUR-WHEEL DRIVE SYSTEM WITH CENTER DIFFERENTIAL LOCK CONTROL RESPONSIVE TO RPM DIFFERENCE

Kunihiko Suzuki, Sagamihara, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 601,002

Claims priority, application Japan, May 23, 1983, 58-90391

Int. Cl.⁴ B60K *17/34*

U.S. Cl. 180—249 **16 Claims**

1. A four-wheel drive vehicle comprising:

an engine,

a front right wheel, a front left wheel, a rear right wheel and a rear left wheel,

a four-wheel drive system for transmitting power from said engine to said front wheels and said rear wheels, said four-wheel drive system comprising a center differential connected between said front wheels and said rear wheels for absorbing a rotational speed difference between said front wheels and said rear wheels, and restraining means capable of holding said center differential selectively in a restrained condition in which the differential action of said center differential is restrained, and in a released condition in which the differential action of said center differential is allowed, said four-wheel drive system further comprising front wheel side rotating means connected between said center differential and said front wheels for driving said front wheels and rear wheel side rotating means connected between said center differential and said rear wheels for driving said rear wheels, said center differential allowing said front wheel side rotating means and said rear wheel side rotating means to rotate at different speeds when said center differential is in the released condition, and

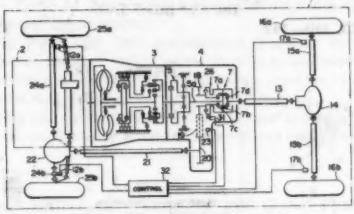
a control system comprising:

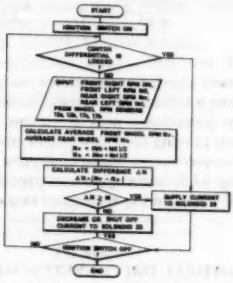
front speed sensing means for sensing a rotational speed of said front wheel side rotating means,

rear speed sensing means for sensing a rotational speed of said rear wheel side rotating means,

condition sensing means for detecting whether said center differential is in or out of said restrained condition, and

control means, connected with both of said front and rear speed sensing means and said condition sensing means, for controlling said restraining means in accordance with signals of said front and rear speed sensing means





and said condition sensing means, said control means commanding said restraining means to bring said center differential to the restrained condition if the difference between the rotational speed of said front wheel side rotating means and the rotational speed of said rear wheel side rotating means is equal to or larger than a predetermined value and at the same time said center differential is out of the restrained condition.

4,552,242

COAXIAL TYPE COMPOSITE LOUDSPEAKER

Akihiko Kashiwabara, Kawasaki, Japan, assignor to Soshin Onkyo Works, Ltd., Yokohama, Japan

Filed Oct. 18, 1983, Ser. No. 543,453
Claims priority, application Japan, Apr. 15, 1983, 58-56421
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—144 **6 Claims**

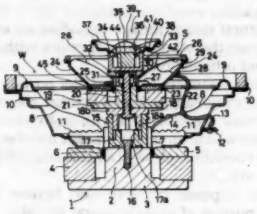
1. A coaxial type composite loudspeaker, comprising:

a woofer;

first and second additional loudspeakers coaxial with the axis of said woofer and in front of said woofer, each of said woofer and said first and second additional loudspeakers having a yoke at the rear thereof and a center pole at the front thereof coaxial with the yoke, said woofer and said first and second additional speakers having different diameter front openings and different allocated frequency bands;

spacers between each of the adjacent loudspeakers for mounting said additional loudspeakers coaxially on said woofer; and

the first of said spacers being between said woofer and the first additional loudspeaker and disposed immediately in front of said woofer and having a plate rest with a closed bottom cylinder against the center of the front end surface of the center pole of said woofer, a screw extending through the closed bottom and into the center pole to fix the plate rest to said center pole, and a mount having an outer plate with a central hole which is in intimate contact



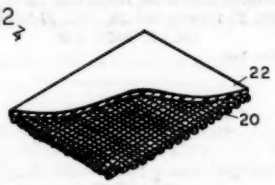
with and disposed centrally on the rear surface of the yoke of said first additional loudspeaker and a cylindrical base projecting from the central rear surface of said outer plate and snugly fitting into the cylinder of said plate rest and adhesively secured therein.

4,552,243

DIAPHRAGM MATERIAL FOR ACOUSTICAL TRANSDUCER

Louis Melillo, Crystal Lake, Ill.; Tsutomu Haga, Yamagata, and Iwao Sashida, Chichibushi, both of Japan, assignors to Pioneer Industrial Components, Inc., Elk Grove Village, Ill.

Filed May 3, 1984, Ser. No. 606,624
Int. Cl.[4] H04R *7/02*
U.S. Cl. 181—169 **17 Claims**



1. A diaphragm for use in an acoustical transducer or loudspeaker, which diaphragm comprises: a tightly-woven, close-weave, self-supporting, carbon fiber woven cloth material and a thin air sealing layer on one or both sides of the woven carbon fiber cloth material to control the internal loss characteristics of the diaphragm and to seal the passage of air through the cloth material, the woven carbon fiber cloth material comprising about 80 percent by volume or more of the volume of the diaphragm, and which diaphragm has a sonic velocity of about 5×10^3 meters per second or greater and a controlled internal loss of about 0.05 (tan σ) or more.

4,552,244

SAFETY SUPPORT AND RESCUE CLAMP

Robert A. Maciejczak, 640 W. Devon, Chicago, Ill. 60631

Filed Sep. 22, 1983, Ser. No. 534,755
Int. Cl.[4] A62B *1/00*
U.S. Cl. 182—82 **15 Claims**

1. A safety support and rescue clamp for use on building structures for supporting personnel and equipment on wall faces of a building structure,

said clamp including a generally rectangular plate-like pawl means having opposed side edges, front and rear edge faces, for selectively and removably positionable within

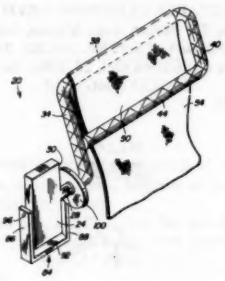
an elongate, generally vertically-extending channel-like slotted track supported on a building structure on a wall face thereof,

the track having a pair of opposed parallel side walls, a rear wall, and a pair of slot-defining, spaced partial front walls,

said pawl means being operable to lock within the track and constituting anchor means for overcoming a weight-derived force vector directed downwardly along the track,

said pawl means being alignable with a slot formed in a forwardly presented face of the track and being insertable into the track through the slot formed therein,

said pawl means being pivotally disposed within the track, and having an overall length which exceeds a distance between the opposed side walls of the track,



said pawl means opposed side edges serving to bridge and grippingly to engage the side walls of the track at opposed lateral interior faces thereof and mechanically to lock said clamp against sliding displacement downwardly within the track,

axle means for pivotally supporting and manipulating said pawl means,

said axle means being joined to and extending rearwardly and normally from said rearwardly directed edge face of said pawl means, and in a plane generally paralleling a principal plane of said pawl means, and

lever means connected to and projecting generally normally of said axle means for imparting rotational movement to said axle means and for, concurrently, pivotally displacing said pawl means carried thereby, in response to pressure applied to said lever means and about said axle means.

4,552,245

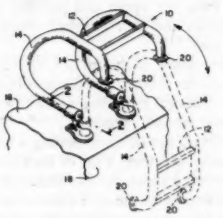
SWIMMING POOL LADDER SECUREMENT DEVICE

Albert W. Lindberg, Jr., 125 W. 6th St., Bayonne, N.J. 07002

Filed Sep. 13, 1984, Ser. No. 650,175

Int. Cl.[4] E06C *9/08*

U.S. Cl. 182—97 **4 Claims**



1. A releasable securement device for a swimming pool ladder having a tubular ladder rail hingedly connected to an anchor mounted in the swimming pool deck, comprising:

a hollow cup-like cylindrical ferrule having an open end and a generally closed end, said ferrule conformed to slidably and coaxially receive the tubular ladder rail through the open end of the said ferrule, the closed end having a hole therethrough located approximately coaxially to the longitudinal axis of said ferrule;

means for hingedly attaching said ferrule to the anchor;

clamping bolt means passing through said hole in the closed end of said ferrule and disposed generally coaxially with the longitudinal axis of said ferrule;

a conically-shaped ring expander having a tapered side wall, and threadably engaged to said clamping bolt means, said expander being coaxially positioned within the tubular ladder rail to be secured, said tapered side wall facing the closed end of said ferrule, said expander having a diameter slightly smaller than the inside diameter of the tubular ladder rail;

a toroidal split ring having a round cross section and being disposed within the ladder rail and engaging the tapered side wall of said expander;

a hollow cylindrical spacer having an outside diameter slightly smaller than the inside diameter of the ladder rail, said spacer being positioned within the ladder rail, between said ring and the closed end of said ferrule, so that when said bolt means is tightened, said expander retracts towards the closed end of said ferrule, forcing the tapered sidewall of said expander to expand said ring radially outward to lockingly engage the inner surface of the rail in a tangential, circular manner, said spacer preventing said ring from moving laterally within the rail.

4,552,246

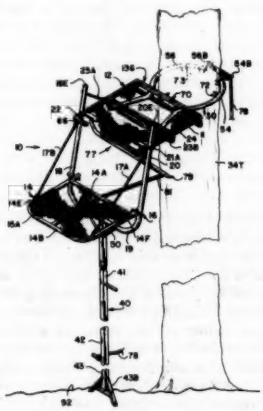
PORTABLE HUNTER TREE STAND

A. Lynn Thomas, Texarkana, Ark., assignor to Thomas Tree Stand Co., Inc., Texarkana, Ark.

Filed Oct. 16, 1984, Ser. No. 661,569

Int. Cl.[4] A01M *31/02*

U.S. Cl. 182—116 **16 Claims**



1. A portable tree stand for use by hunters, outdoorsmen or the like for positioning themselves at an elevated position upon a tree, said tree stand comprising:

a rigid, generally planar seat for supporting said hunter, outdoorsman or the like above ground, said seat having a rigid frame, a pair of opposite sides, and a front and a rear;

a generally U-shaped, rigid support yoke having a pair of spaced-apart, generally parallel ends pivotally coupled to said planar seat upon opposite sides thereof;

a rigid, generally planar, cooperating foot rest pivotally secured to said U-shaped yoke adapted to be selectively

deployed in an operational position generally parallel with and beneath said seat portion;

jaw means for securing said stand to a tree, said jaw means comprising first and second cooperating jaw members pivotally secured to said seat frame and adapted to be selectively deployed in substantially circumferential engagement with a tree, said jaw members occupying a plane substantially parallel with said planar seat, each of said jaw members provided with a plurality of tree engaging spikes for engaging the tree, said jaw members extending outwardly from said seat away from the rear thereof;

a rigid, tree-engaging V-brace pivotally secured to said seat frame generally at the front of said seat, said brace extending downwardly and converging in a pointed portion adapted to forcibly penetrate said tree beneath and to the rear of said seat; and,

elongated ladder means for supporting said tree stand, said ladder means, when deployed, extending between ground and said tree stand and facilitating the installation and removal of said stand and the ingress and egress of said hunter, outdoorsman or the like relative to said stand.

4,552,247

DEER STAND

Ricky A. Purdy, 716 E. Sixth, DeWitt, Ark. 72042

Filed Oct. 17, 1984, Ser. No. 662,450

Int. Cl.[4] A01M *31/02*

U.S. Cl. 182—116 **8 Claims**

1. An observation stand including upper and lower upstanding ladder sections removably joined together in end aligned relation with the upper section forming an upper extension of the upper end of the lower section, said upper and lower sections each including opposite side upstanding stiles and vertically spaced rungs extending between and interconnecting said stiles, said upper ladder section including a standing platform mounted between the stiles thereof below the upper ends of the stiles and spaced generally the same distance above the next lower rung of the upper section as the last mentioned rung is spaced above the next lower rung, one marginal inner portion of said platform extending between the upper section stiles and said platform extending horizontally outwardly of the medial plane of said upper section, the upper end portions of said upper stiles including generally horizontal arms projecting outwardly therefrom and spaced above and generally paralleling said platform, the outer ends of said arms being interconnected by bracing structure extending therebetween defining a horizontally outwardly opening tree trunk embracing recess having an innermost limit spaced outward of the outer marginal portion of said platform remote from said one marginal portion thereof, seat defining panel structure supported from and spanning the space between said arms and spaced outward along the latter from said upper section stiles, and inclined opposite side and elongated brace members including upper ends anchored relative to the outer end portions of said arms, lower ends anchored to said upper section stiles below said platform and intermediate length portions anchored relative to the opposite ends of the outer marginal portion of said platform, the spacing of said seat defining panel structure outwardly along said arms from the upper section stiles providing an unobstructed vertically extending zone above at least the inner marginal portion of said platform between said arms for receiving the legs of a person standing on said platform, the included angle between said platform and the portions of said upper section stiles below said platform being slightly greater than 90°.

4,552,248

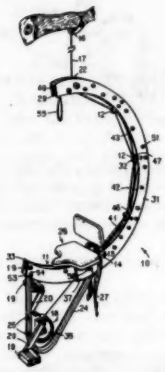
PORTABLE CLIMBING DEVICE

Jehugh A. Payne, 271 Berean Ave., Atlanta, Ga. 30316

Continuation-in-part of Ser. No. 284,383, Jan. 6, 1982, abandoned. This application Oct. 25, 1984, Ser. No. 664,512

Int. Cl.[4] E04G *3/10*

U.S. Cl. 182—142 **9 Claims**



1. A portable climbing device which is adapted to be hung from an existing overhead structure such as a tree limb, comprising:

(a) a frame having at least one arcuate member; the arcuate member being generally bisected in a longitudinal direction;

(b) a seat member mounted on the arcuate member and extending generally upwardly toward the center of curvature thereof; the arcuate member having a pair of end portions defining an opening, the arcuate member occupying a narrow region of space which extends generally downwardly from the upper end portion and above, behind and beneath the seat member when the frame is suspended in use;

(c) a supporting member, each arm of which is connected to the arcuate member to form a structure proximate the seat member; said structure extending away from the center of curvature of the arcuate member;

(d) means for hoisting the frame including a winch mounted on the supporting member, a set of foot pedals rotatably connected thereto, a support cable attached to the winch, and means connected to the foot pedals for engaging the winch so that the cable can be alternately retracted and extended by pedaling; and

(e) a pair of skids for detachably mounting the seat member on the arcuate member, the skids straddling a section of the arcuate member having a side with a concave surface which extends outwardly between the pair of skids, and

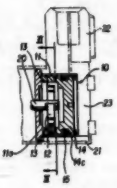
means for adjusting the positions of the skids to and fro along said section; the seat member remaining in a generally upright position when the frame is suspended in use; the distance between the uppermost portion of the seat member and said concave surface remaining approximately constant as the positions of the skids are adjusted, so that as the spacing between the foot pedals and the seat member is increased, there is an increase in the amount of space free of obstacles above the seat member as indicated by an increase in the angle between two imaginary lines extending from the center of the uppermost portion of the seat member, one of these lines joining said center to said upper end portion of the arcuate member and the other of these lines extending downwardly from said center perpendicularly to said concave surface.

4,552,249

MOUNTING DEVICE FOR SPIRAL SPRING

Motonobu Akagi, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 27, 1983, Ser. No. 461,384
Claims priority, application Japan, Feb. 3, 1982, 57-13772[U]
Int. Cl.[4] F03G *1/08*
U.S. Cl. 185—39 **4 Claims**



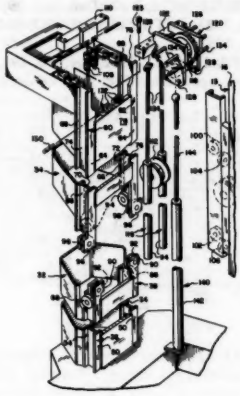
1. A mounting device for a spiral spring, comprising:
a rotatable shaft;
a casing having a wall through which a first end of said rotatable shaft extends;
spiral spring means for biasing said rotatable shaft in one direction, said spiral spring means having an inner end which is engaged with said first end of said rotatable shaft;
a spring holder positioned within said casing and having a first projection extending therefrom with which an outer end of said spiral spring means is engaged;
cover means fitted within said casing for covering said spiral spring means and engaging with said spring holder so as to be rotated therewith and for thereby adjusting the biasing force of said spiral spring means; wherein said rotatable shaft has a groove formed therein and wherein said spiral means has an inner end portion which is fitted within said groove formed in said rotatable shaft and said cover means further comprises a first and second notch formed therein and an annular groove formed on the outer periphery thereof and wherein said spring holder further comprises a second projection extending therefrom such that said first and second projections of said spring holder are received within said first and second notch, respectively, of said cover means; and
an O-ring installed in said annular groove hermetically sealing an open end of said casing and preventing free rotation of said cover means by an interference provided by engagement of said o-ring between the cover means and the casing.

4,552,250

LIFT TRUCK

Donald Luebrecht, Fort Jennings, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio

Filed Apr. 22, 1983, Ser. No. 487,625
Int. Cl.[4] B66B *9/20, 7/02*
U.S. Cl. 187—9 E **8 Claims**



1. A lift truck comprising:
a frame;
a mainframe mast attached to and extending upwardly from said frame, said mainframe mast having a first pair of parallel, vertically-extending beams, a continuous, substantially flat, relatively thin-walled front wall attached to and extending between said first pair of beams and a continuous, relatively thin-walled, vertically-extending rear channel having a substantially flat rear wall opposite said front wall and a pair of opposing side walls extending rearwardly from said beams and having longitudinal edges attached thereto, said beams, front walls and channel forming a substantially enclosed, continuous body;
a second stage mast positioned to telescope over an exterior of said mainframe mast and having a second pair of parallel, vertically-extending beams, a continuous, substantially flat, relatively thin-walled outer front wall attached to and extending between said second pair of beams, and a continuous, relatively thin-walled, vertically-extending outer rear channel having a substantially flat outer rear wall opposite said outer front wall and a pair of opposing outer side walls extending rearwardly from said second pair of beams and having longitudinal edges attached thereto, said second pair of beams, outer front wall and outer rear channel forming a substantially enclosed, continuous outer body sized to telescope over but not contact said mainframe mast;
said mainframe mast including a first pair of transverse rollers having rotational axes oriented substantially transversely, and a first pair of longitudinal rollers having rotational axes oriented substantially longitudinally, said first pairs of rollers engaging said second pair of beams;
said second stage mast having a second pair of transverse rollers having axes oriented substantially transversely, and a second pair of longitudinal rollers being substantially coplanar with said front wall of said mainframe mast and having rotational axes oriented substantially longitudinally, said second pairs of rollers engaging said first pair of beams, whereby contact between said mainframe mast and said second stage mast is limited to rolling contact by said rollers against said beams;
lifting fork means movably mounted to said second mast; and
means for elevating said second stage mast relative to said

mainframe mast and for elevating said lifting fork means relative to said second stage mast.

4,552,251

CYCLE WHEEL RIM BRAKE CONSTRUCTION

Robert Schoch, Hilzingen, Fed. Rep. of Germany, assignor to Weinmann AG, Hohentwiel, Fed. Rep. of Germany

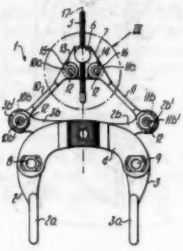
PCT No. PCT/EP82/00226, § 371 Date Apr. 29, 1983, § 102(e) Date Apr. 29, 1983, PCT Pub. No. WO83/01423, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 12, 1982, Ser. No. 495,337

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 3141004

Int. Cl.⁴ B62L *1/12*

U.S. Cl. 188—24.21 **9 Claims**



1. A cycle wheel rim brake construction comprising a one piece mounting member; means for mounting said mounting member between its ends on a cycle frame; a pair of similar two-armed levers corresponding arms of which are adapted to straddle a wheel rim and support brake pads and the other arms of which overlie one another and terminate in free ends located on opposite sides of a plane passing between said corresponding arms; means pivotally mounting both of said levers on said mounting member and at opposite ends of the latter for movements of said corresponding arms toward and away from one another; a unitary cable carrier plate having opposite ends located on opposite sides of said plane; means for adjustably clamping a traction cable to said carrier plate between the ends thereof and coincident with said plane; and a pair of pull rods pivotally connected at corresponding ends to the free ends of said other arms of said levers and at their opposite ends to the opposite ends of said carrier plate, said opposite ends of said pull rods and said opposite ends of said carrier plate having cooperable stops engageable with one another for limiting movement away from one another of said corresponding ends of said levers.

4,552,252

CARRIER BODY FOR A DISC BRAKE PAD

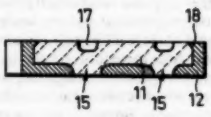
Kurt Stahl, Wahner Strasse 19 - 21, 5000 Köln 21, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,381

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935943; Aug. 8, 1980, 3030003

Int. Cl.⁴ F16D *65/04*

U.S. Cl. 188—73.1 **7 Claims**



1. In a carrier body of a brake pad for disc brakes, which carrier body is arranged to support a block of friction material of the brake pad and includes a plate-shaped molded member of a hard ceramic material presenting a rear face and a circumferential edge face, and a cover made of metal and secured to the member and contacting the rear face of the member, the improvement wherein said metal cover is applied to said member in a casting process in which molten metal is introduced into a mold containing said molded member to contact the rear face and the circumferential edge face of said molded member and the molten metal is then cooled and solidified to form said metal cover, whereby said metal cover closely contacts the rear face and circumferential edge face of said molded member and additionally encases said circumferential edge face of said plate-shaped molded member and imposes compressive stresses in said molded member and further wherein said molded member has a frontal face opposite said rear face and provided with recesses and said rear face of said molded member is provided with projections which penetrate said metal cover and correspond in their orientation approximately to said recesses in said frontal face.

4,552,253

FLOATING-CALIPER DISC BRAKE

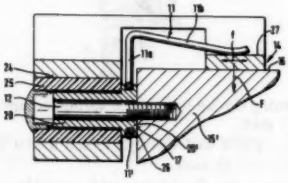
Jochen Burgdorf, Offenbach-Rumpenheim, and Roberto Stoka, Nauheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 1, 1983, Ser. No. 500,064

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223627

Int. Cl.⁴ F16D *65/00*

U.S. Cl. 188—73.38 **7 Claims**



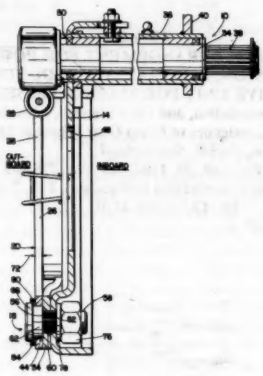
1. A floating caliper disc brake mechanism comprising a pair of disc brake shoes adapted to be mounted adjacent opposed axial faces of a wheel brake disc, a caliper assembly mounted for floating movement in a direction axial to a support member to control movement of the brake shoes relative to said brake disc, a pair of spaced guide bolts mounting said caliper assembly to said brake support member to enable movement of said caliper assembly in a direction axial to the support member with the axis of said bolts generally parallel to the axis of said support member and disc a guide bushing surrounding each guide bolt, at least one generally L-shaped retaining spring having a retaining leg thereof having a section forming a lug surrounding said guide bushing to mount the spring thereto and another section extending in a direction radial to an adjacent one of said bolts for firmly positioning said spring against a surface of said support member transverse to the axis of movement of the caliper assembly, another leg of said retaining spring extending parallel to the axis of movement of said caliper assembly and exerting a force transversely on the caliper assembly to retain said caliper assembly against said support member in a slide frictional engagement therewith to enable the axial slide movement of the caliper assembly relative to said support member and to the other leg of the spring.

4,552,254

DRUM BRAKE SPIDER ASSEMBLY WITH CANTILEVER ANCHOR PIN

Gunnar Baltare, Portage, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 22, 1983, Ser. No. 506,926
Int. Cl.[4] F16D 51/20; F16B 2/14
U.S. Cl. 188—328 9 Claims



1. A spider assembly for an expanding shoe drum brake of the type utilizing cantilever anchor pin mounting wherein the brake shoes are pivotably supported at a generally concave cavity structure defined in one end of the brake shoe web structure on an anchor pin structure extending outwardly from the outboard side of the spider member, said assembly comprising;

a spider member having a centrally located mounting portion adapted for non-rotational mounting to a vehicle, an actuator support portion at one end thereof and an anchor pin support portion at the other end thereof, said anchor pin support portion defining an anchor pin receiving bore therethrough;

an anchor pin received in said anchor pin receiving bore, said anchor pin defining a first portion received in said anchor pin receiving bore, a pivot surface portion extending from said anchor pin receiving bore in the outboard direction and of a larger outer diameter than the inner diameter of said anchor pin receiving bore, said pivot surface portion outer diameter generally equal to the inner diameter of said concave cavities, said pivot surface portion of a greater axial length than the axial width of said brake shoe webs, and a slightly enlarged headed portion at the outboard end of said anchor pin;

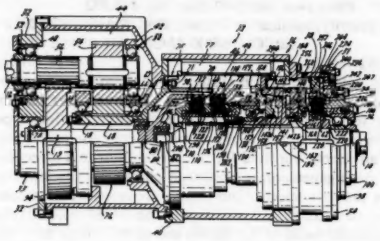
a generally annular washer slidably received on said pivot surface portion, said washer having a generally flat radially extending portion with a centrally located aperture therethrough for receipt of said pivot surface portion, the inner diameter of said aperture being smaller than the outer diameter of said headed portion, said radially extending portion of a greater outer diameter than the inner diameter of said concave cavity, and an axially extending portion extending in the outboard direction from the outer periphery of said radially extending portion, said radially extending portion having an axial thickness less than the difference between the axial length of said pivot surface portion and the axial width of said web structure, the combined axial width of said radially extending portion and said axially extending portion of said washer greater than the difference between the axial length of said pivot surface portion and the axial width of said web structure, said axially extending portion extending generally perpendicularly from said radially extending portion and defining an inner diameter surface having a radius greater than the outer diameter radius of said headed portion.

4,552,255

MULTIPLE SPEED DRIVE

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Company, Warren, Mich.

Filed Aug. 8, 1983, Ser. No. 521,250
Int. Cl.[4] F16D 67/04
U.S. Cl. 192—18 A 13 Claims



1. A multiple speed drive unit comprising: a housing defining a central cavity between opposite longitudinally spaced end walls, a main shaft extending coaxially through said opposite spaced end walls and comprising first and second coaxially arranged shaft sections; said first shaft section further comprising inner and outer shaft sections, first and second series of radially disposed clutch plates spaced axially from one another and mounted in said cavity for rotation with said inner and outer shaft sections respectively of said first shaft section; a series of radially disposed brake plates spaced axially from both series of said clutch plates and non-rotatably disposed in said cavity; a series of friction discs mounted on said second shaft section for rotation therewith and adapted for selective frictional engagement with said clutch and brake plates; first and second clutch actuating members located on axially opposite sides of selective of said friction discs and movable axially of said shaft sections, with movement thereof in one direction serving simultaneously to frictionally engage said first series of clutch plates with selected of said friction discs and to release selected of the remaining friction discs from frictional engagement with said second series of clutch plates and with movement thereof in the other direction serving simultaneously to release said first series of clutch plates from said frictional engagement with selected of said friction discs and to frictionally engage said second series of clutch plates with selected of said remaining friction discs; a non-rotatable piston member disposed in said housing coaxial of said main shaft and movable between first and second positions for effecting axial movement of said actuating member; first pressure applying means including a pressurized fluid acting against one side of said piston member for urging said piston member toward one of said positions of clutch engagement; second pressure applying means including a pressurized fluid acting against the other side of said piston member for urging said piston member toward the other of said positions of clutch plate engagement; means for equalizing the pressures applied to said first and second pressure applying means to urge said piston to an intermediate position at which neither series of clutch plates is engaged with said friction discs; a brake actuating member axially spaced from said clutch actuating members and movable axially of said main shaft with movement thereof in one direction serving to frictionally engage said brake plates with selected of said friction discs mounted on said second shaft section and movement thereof in the opposite direction serving to release said brake plates from engagement with selected of said friction discs; a second non-rotatable piston member disposed in said housing coaxial of said shaft and movable between first and second positions for effecting axial movement

of said brake actuating member; spring means for urging said second piston member toward one of said brake actuating member positions; and third pressure applying means including a pressurized fluid acting against one side of said second piston member for urging said piston member toward the other of said brake actuating member positions against the bias of said spring means.

4,552,256

MOTOR, CLUTCH AND GEARING CONTROL

Jean Legrand, 24, rue Ernest Renan, 92310 Sevres, France

Filed Nov. 30, 1982, Ser. No. 445,835
Claims priority, application France, Dec. 9, 1981, 81 22991
Int. Cl.⁴ B60K *41/28*
U.S. Cl. 192—0.052 **17 Claims**

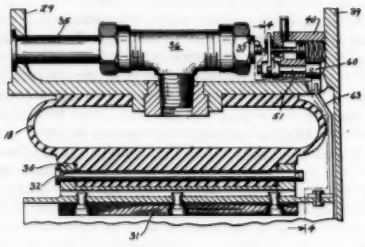
1. In an automatic clutch system which provides an automatic coupling between an engine and a driven mechanism, especially for automotive vehicles, comprising a fluid-type servomotor connected to a clutch unit, means for producing action of an energizing fluid for the servomotor in a direction of clutch disengagement, a discharge circuit for discharging fluid from the servomotor, and clutch progressiveness means comprising two members mechanically connected respectively to an accelerator pedal of the engine and to the clutch unit and together defining between them at least one variable orifice in said discharge circuit to modify the action of said servomotor in a direction of clutch engagement in such a manner as to ensure that a cross-sectional area of the at least one orifice tends to decrease when the clutch unit moves towards an engaged position and that said cross-sectional area tends to increase when the accelerator pedal is displaced so as to increase the engine speed; the improvement in which said system further comprises in said discharge circuit, flow area varying means responsive to at least one running condition of the vehicle other than position of the clutch unit or of the accelerator pedal, said flow area varying means being adapted to adjust in said circuit, as a function of said at least one running condition, a flow sectional area for said fluid flowing through the at least one variable orifice.

4,552,257

OVERLOAD PROTECTION MECHANISM FOR CLUTCHES

Ronald A. Witt, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Oct. 21, 1983, Ser. No. 544,253
Int. Cl.⁴ F16D *7/02*
U.S. Cl. 192—56 F **6 Claims**



1. An overload mechanism for a pneumatic clutch which includes an air inflatable flexible gland secured at one side to a rim and mounting clutch shoes on its opposite side, said mechanism comprising:

an air valve operatively connected to said gland and including a valve stem;

a spring loaded actuator biased to engage said stem to open said valve;

holding means adapted to be interposed between said stem and actuator to prevent engagement of said stem by said actuator; and

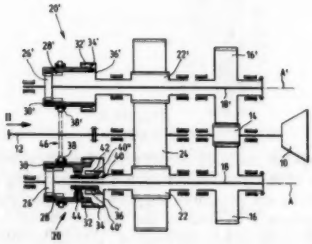
means responsive to relative movement between said rim and said shoe for moving said holding means from between said stem and actuator to release said actuator.

4,552,258

CLUTCH ARRANGEMENT FOR POWER TRANSMISSION, ESPECIALLY A REDUCTION GEAR DRIVE UNIT FOR MARINE VESSELS

Hans Sigg, Mutschellen, and Otto Staedeli, Menzingen, both of Switzerland, assignors to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

Filed Jan. 30, 1984, Ser. No. 575,469
Claims priority, application Switzerland, Feb. 2, 1983, 574/83
Int. Cl.⁴ F16D *23/02, 41/22*
U.S. Cl. 192—67 A **6 Claims**



1. A clutch device for a power transmission unit, especially a toothed clutch device for a marine propulsion gear transmission, comprising:

a self-engaging main clutch disposed in a first power transmission path of said power transmission unit;

synchronizing means provided for said self-engaging main clutch;

at least one subsidiary clutch devoid of any synchronizing means and being disposed in a further power transmission path acting in parallel to said first power transmission path;

an actuating mechanism for translating an engagement motion of said main clutch into an engagement motion of said at least one subsidiary clutch;

each of said main and subsidiary clutches being provided with helical clutch teeth engaging corresponding, mating, clutch teeth with substantially no clearance; and

said actuating mechanism coupling the main and subsidiary clutches with substantially no clearance.

4,552,259

RESIN-REINFORCED, NODULAR PLATED WET FRICTION MATERIALS

Clarence E. Albertson, Villa Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

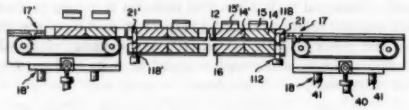
Filed Jun. 27, 1984, Ser. No. 625,333
Int. Cl.⁴ F16D *13/00*
U.S. Cl. 192—107 M **6 Claims**

1. A torque transmitting element adapted for use in a clutch comprising a rigid backing member and a wear facing affixed to said backing member, said wear facing comprising a nodular plated metallic coating further coated with phenolic resin.

4,552,260
WORKPIECE FEEDING APPARATUS

Vladimiro Teagno, and Alessandro Chiusa, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 15, 1983, Ser. No. 561,701
Int. Cl.⁴ B65G *21/20*
U.S. Cl. 198—345 **6 Claims**

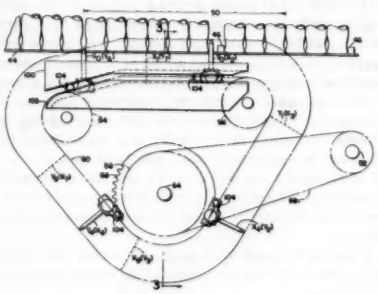


1. Apparatus for feeding electrical connectors (15, 15) into alignment with respective workstations (13, 13') arranged in a row comprising a frame (11) providing a feed path (12) extending past the workstations (13, 13') between an exit and an entry end; a plurality of individual pallets (14, 14') having precise longitudinal dimensions and adapted to carry respective connectors (15, 15); means to shunt (17, 17') a series of the pallets (14, 14') in end-to-end relation along the feed path (12) substantially to fill the feed path (12) between the entry and exit ends bringing pallets (14, 14') sequentially into coarse alignment with respective workstations (13, 13'); pallet positioning means (21, 21') comprising means including at least one cam member (104, 104') mounted on the frame (11) adjacent opposite ends of the feed path (12) and operable to reciprocate perpendicularly to the feed path (12) into and out from engagement with the leading and ultimate pallet (14, 14') of the series of pallets (14, 14') subsequent to operation of the indexing means (17, 17'), to urge the pallets (14, 14') longitudinally of the feed path (12) both into end-to-end abutment and together as a series precisely to align respective connectors (15, 15') with the workstations; and pallet return means comprising a return path (16) having an entry end adjacent the exit end of the feed path (12) and an exit end adjacent the entry end of the feed path, means (18, 18') being provided to convey the pallets (14, 14') between the exit end of the return path (16) and the entry end of the feed path (12).

4,552,261
ARTICLE GROUPER FOR CASE PACKER

John L. Raudat, North Madison, and Timothy H. Thompson, Durham, both of Conn., assignors to Standard-Knapp, Inc., Portland, Conn.

Filed Dec. 27, 1983, Ser. No. 565,754
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—425 **6 Claims**

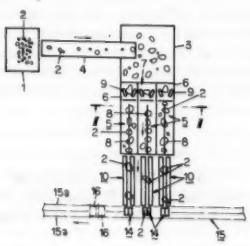


1. A conveyor system for forming discrete groups of articles from a column of advancing articles in a downstream direction between lane guides, said system comprising at least two conveyor chains, projecting pins carried by said chains, variable speed drive means for moving one chain at a speed which varies cyclically as said one chain follows a closed orbit that includes an upper run so oriented that said pins move in the same path and in the same direction as the advancing articles, differential means coupling said one chain to the other chain so that its pins move in the same orbit but at a speed which varies inversely to that of said one chain and pins, said pins provided in staggered relationship to one another in said orbit to provide a predetermined pitch distance between said pins as they move along said upper run, and said pitch distance between pins in said two conveyor chains varying cyclically between maximum and minimum limits, and means for adjusting said differential means to provide a desired spread or difference between said maximum and minimum pin pitch limits.

4,552,262
ARTICLE FEEDING APPARATUS

Katsuhiko Murakami, and Yoshio Iwamoto, both of Shiga, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

PCT No. PCT/JP83/00012, § 371 Date Jul. 27, 1983, § 102(e) Date Jul. 27, 1983, PCT Pub. No. WO83/02407, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 13, 1983, Ser. No. 522,303
Claims priority, application Japan, Jan. 19, 1982, 57-7315; Jan. 19, 1982, 57-7316; Jan. 19, 1982, 57-7317; Jan. 19, 1982, 57-6153; Jan. 19, 1982, 57-6154; Jan. 20, 1982, 57-6852; May 17, 1982, 57-72089; May 17, 1982, 57-72090
Int. Cl.⁴ B65G *47/26*
U.S. Cl. 198—447 **10 Claims**



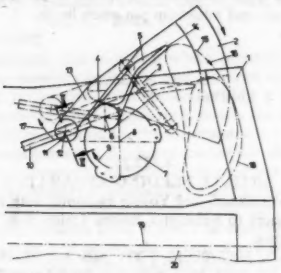
1. An article feeding apparatus comprising:
(a) a plurality of feed troughs disposed side by side with each other with their take-in ends formed as flat surfaces in juxtaposed relation in a plane;
(b) a plurality of arranging conveyors parallel with each other and each being effective to cause articles being fed thereon from its associated feed trough to pass therealong in a line;
(c) pool hoppers disposed at the take-out ends of said arranging conveyors and adapted to open and close;
(d) a bucket conveyor for feeding to the next process the articles dropped therein from said pool hoppers one by one, said buckets supported to turn around the axes of pivots; and
(e) article separating means disposed at a predetermined position in the path of travel of the buckets of said bucket conveyor and adapted to separate a plurality of articles from each other if such articles are charged into a bucket, said article separating means including at least one rotary brush with the tips of its bristles penetrating members forming the bottom of said bucket.

4,552,263

DRIVE ARRANGEMENT FOR THE LOADING ARMS OF A LOADING RAMP FOR HEADING MACHINES OR LONGWALL SHEARING MACHINES

Arnulf Kissich, Zeltweg; Franz Schöffmann, Leoben; Alfred Zitz, and Gerhard Steinbrucker, both of Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jun. 14, 1983, Ser. No. 504,306
Claims priority, application Austria, Jul. 2, 1982, 2576/82
Int. Cl.[4] B65G 65/02
U.S. Cl. 198—514 10 Claims



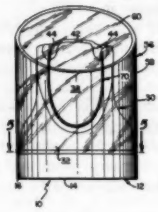
1. A loading head for a mining machine of the type having a loading ramp, the ramp having laterally extendable ramp members pivotally connected to the mining machine to vary the effective width of the ramp, the loading head having at least one loading arm cooperating with the extendable ramp member, a drive means for the loading arm comprising a rotary disc, the loading arm being pivotally connected to the disc at its periphery whereby rotation of the disc causes an essentially orbital path of the loading arm, the loading arm having a guide arm extending outward from the pivotal connection between the loading arm and the disc and the guide arm being pivotally connected to the extendable ramp member whereby movement of the extendable ramp alters the position of the orbital path of the loading arm.

4,552,264

JEWELRY CONTAINER

Richard Quarrell, and Paul A. Ranson, both of New York, N.Y., assignors to General Mills Products Corp., Minneapolis, Minn.

Filed Mar. 27, 1984, Ser. No. 593,999
Int. Cl.[4] B65D 5/50, 73/00
U.S. Cl. 206—45.14 16 Claims



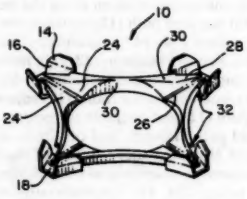
1. A jewelry container comprising a cup-shaped base including a circular bottom and a cylindrical wall extending upwardly from the periphery of said circular bottom, said cylindrical wall having a longitudinally directed rib disposed on the interior thereof at one angular location, a pedestal for holding and displaying a jewelry article to be contained, the pedestal having a substantially cylindrical lower portion of a diameter to fit within said cylindrical wall and having an upper portion extending above said cylindrical wall, said pedestal also having a longitudinally directed groove receiving said rib therein to establish a predetermined angular relationship of said pedestal with respect to said cylindrical wall, the upper portion of said pedestal including a generally flat sloping panel, a cylindrical-shaped cover, said cover having a slant top, and means releasably interfitting the lower edge of said cover to the upper edge of said cylindrical wall when said pedestal is in said predetermined angular relationship with respect to said base, the slant top of said cover being in a predetermined angular relationship with said pedestal when said pedestal is in its said predetermined relationship with said base.

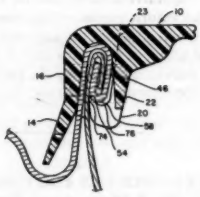
4,552,265

CAN CLIP AND MULTIPLE CONTAINER PACKAGE

James S. Bader, Lakewood, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Aug. 17, 1983, Ser. No. 524,129
Int. Cl.[4] B65D 71/00
U.S. Cl. 206—159 8 Claims





1. A clip having a plurality of discrete body portions, each of said discrete body portions capable of holding a can to form a multiple container package, said discrete body portions comprising:

hook means for engaging a chime portion of said can;

support wall means integral with and extending upwardly from said hook means said support wall means having a surface in contact with an adjacent surface of said can for uniformly supporting said hook means along a predetermined arc which is concentric with said hook means;

a plurality of spaced apart ear means having holding portion means extending downwardly and located for holding said can in engagement with said hook means;

said hook means and said support wall means extending for substantially the entire distance between said spaced apart ear means but spaced a short distance from each of said ear means;

shelf means integral with said ear means and extending inwardly from said ear means at the upper portion of said ear means;

flange means integral with said shelf means and the upper portion of said support wall means;

hinge means integral with said shelf means and said flange means for coupling said shelf means and said flange means of adjacent discrete body portions along predetermined lines of weakness;

said flange means maintaining the position of said support wall means relative to said plurality of discrete body portions during disengagement of said can from each of said spaced apart ear means by limiting movement of said support wall means relative to said plurality of discrete body portions to allow said ear means to move relative to said hook means during disengagement of said can to release said can from said discrete body portion.

4,552,266

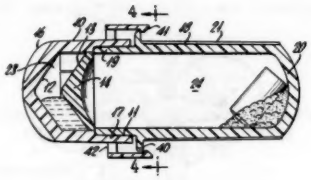
DISPOSABLE DENTAL CAPSULE

Edward Weissenburger, Mercerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 933,015, Aug. 14, 1978, abandoned. This application May 25, 1979, Ser. No. 41,756

Int. Cl.⁴ B65D *81/32*

U.S. Cl. 206—220 **18 Claims**



1. A disposable dental capsule comprising:

a first hollow cylindrical section having an open end and a closed end;

a second hollow cylindrical section having an open end and a closed end;

means for joining a securing said open ends of said first and second cylindrical sections to form a closed cylindrical container;

a displaceable, flexible disk having an edge in sealing engagement with the inner wall of said cylindrical container whereby said container is divided into two, noncommunicating inner chambers, and having one face conforming to the shape of the inside surface of one end of said container; and

edge compression means for maintaining said edge under compression to maintain the seal between said edge and said inner wall of said cylindrical container,

whereby when said disk is displaced to said one end of said container, the face of said disk nests therewith and one of said inner chambers is substantially eliminated.

4,552,267

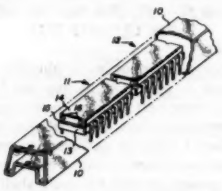
CERAMIC SEMICONDUCTOR PACKAGE CHIP PREVENTION STRUCTURE AND METHOD

Francis W. Layher, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 11, 1985, Ser. No. 710,354

Int. Cl.⁴ B65D *85/30, 81/00;* **H05F** *3/02;* **H05K** *5/00*

U.S. Cl. 206—334 **11 Claims**



1. In a ceramic package made up of parts sealed together to house an electronic device, which is to be handled in plural numbers pursuant to testing and using, wherein such handling may act to impact the devices and thereby chip said ceramic and a heat-resistant, non-absorbent, resilient coating material is located on said package to absorb said impact whereby the incidence of chipping of said ceramic is reduced, the improvement comprising:

said coating being composed of a glass loaded with malleable metal particles and fused to the surface of said ceramic package.

4,552,268

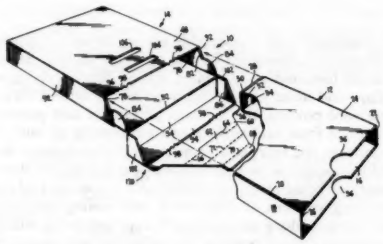
LIGHT-TIGHT CARTON FOR X-RAY AND OTHER LIGHT SENSITIVE FILM

John F. Lee, Vernon, N.J., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Jan. 20, 1984, Ser. No. 572,298

Int. Cl.⁴ B65D *85/67*

U.S. Cl. 206—455 **15 Claims**



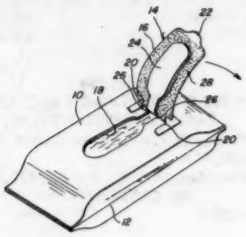
1. A reclosable carton unit for film and like light sensitive materials, said carton unit comprising inner and outer cartons formed of light proof paperboard, said outer carton comprising front and rear panels joined together by sides, a bottom panel and a top panel, said top panel being hingedly carried by said rear panel, said front panel having a top portion and a remainder, said top portion being connected to the remainder along a rupturable transverse weakening line spaced from said top panel, a closure panel carried by said top panel and overlying an upper part of said front panel including said top portion, said side walls having weakening lines extending from ends of said front panel weakening line and defining top side portions, said top portion being fixedly secured to said closure panel, said inner carton extending across and beyond all of said weakening lines whereby when said outer carton is opened and reclosed, said inner carton extends across and forms a light barrier across parting lines defined by rupture of said front panel and said sides along said weakening lines, and locking tabs carried by said closure panel for locking engagement with said front panel below said weakening line thereof.

14. A carton to be reclosed in a darkroom and the like, said carton including a front panel and a closure panel for overlying said front panel, said closure panel has hingedly connected thereto a locking flap with locking tabs, said locking flap having at a free end thereof a secondary one of said locking tabs facing away from said closure panel, and there being a primary one of said locking tabs carried by said locking flap and formed from said closure panel, and there being locking apertures in said front panel for receiving said locking tabs, a portion of said front panel closely adjacent and above said locking aperture for said primary locking tab being colored differently from said closure panel, and a portion of said front panel closely adjacent and below the other of said locking apertures being colored differently from said closure panel whereby failure of either or both of said locking tabs to engage in a respective locking aperture will be automatically visually identified.

4,552,269
RESEALABLE SEALING DEVICE

Sung-Chol Chang, 101 W. 31st St., Suite 2306, New York, N.Y. 10001

Filed Dec. 7, 1983, Ser. No. 558,989
Int. Cl.[4] B65D *33/16, 33/20*
U.S. Cl. 206—632 2 Claims



1. A container with a resealable sealing device, comprising in combination, a container having an outer surface, an elongated inner flap, and an elongated sealing flap overlying said inner flap, said inner flap having a periphery with a forward and rearward portion, the forward portion of said periphery being cut out from said surface and terminating at said rearward portion, the rearward portion of said periphery being integrally attached to said surface along a line of attachment, said inner flap being pivotally liftable with respect to said outer surface along said line of attachment, said sealing flap having adhesive applied along one surface thereof and being attached onto said inner flap by means of said adhesive, said sealing flap being larger than said inner flap so as to define a peripheral border around said inner flap, said peripheral border including a front border portion, side border portions and a rear border portion, the rear border portion overlapping the rearward portion of said periphery of the inner flap, and being permanently attached to the outer surface of the container by means of said adhesive, a pair of opposing L-shaped cuts formed into said sealing flap commencing from opposing side edges thereof and partially extending into said side border portions of said sealing flap and then extending rearwardly toward the permanently attached rear border portion and terminating at said line of attachment, a first pair of tear prevention holes formed at the termination of said L-shaped cuts, and a second pair of tear prevention holes formed at the termination of said forward portion peripheral cut of said inner flap, all said tear prevention holes lying on said line of attachment, whereby said sealing flap can be pivotally lowered to replace said inner flap into its cut out and thereby seal the container by having the front border portion and the side border portions of said peripheral border of the sealing flap adhere to the container outer surface by means of said adhesive, and can pivotally be lifted to open the container without the permanently attached rear border portion lifting off and without said inner flap being detached.

4,552,270
STORAGE SYSTEM FOR ATHLETIC EQUIPMENT OR THE LIKE

Scott B. Lentz, 1000 N. Columbus St., and Howard C. Dale, 1013 Duke St., both of Alexandria, Va. 22314

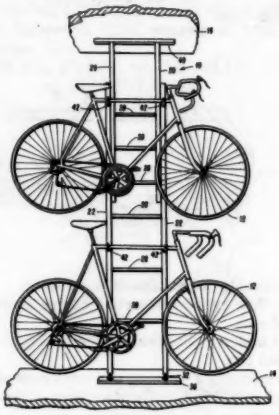
Filed Mar. 1, 1984, Ser. No. 585,192
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—17 9 Claims

1. A storage system for holding athletic equipment and the like, comprising:

(a) first and second longitudinal support members, each of said longitudinal support members comprising an upper and a lower longitudinally adjustable section, said upper longitudinally adjustable section having a first set of drillings formed therein, said lower longitudinally adjustable section having a second set of drillings formed therein, wherein at least two of said drillings of said first set overlap with at least two of said drillings of said second set to define a number of overlap regions exactly corresponding to the number of drillings in said first and second sets which overlap;

(b) a plurality of cross support pieces extending from the first and second set of drillings in said first longitudinal support member to said first and second drillings of said second longitudinal support member, at least two of said plurality of cross support pieces extending through respective overlap regions of said first and second longitudinal support members;

(c) means for adjustment operatively connected with a first end of each of said first and second longitudinal support members;



(d) a first substantially horizontal contact member in engagement with said means for adjustment and adapted for contact with a first contacting surface;

(e) a second substantially horizontal contact member in engagement with a second end of said first and second longitudinal support members and adapted for contact with a second contacting surface;

(f) a plurality of support means connected to each of said first and second longitudinal support members;

whereby coarse length adjustment of said first and second longitudinal support members is achieved by moving said upper and lower longitudinally adjustable sections relative to one another to thereby redefine the overlap regions, and fine length adjustment, as well as adjustment for non-parallelism of said first and second contacting surfaces, are achieved by said means for adjustment.

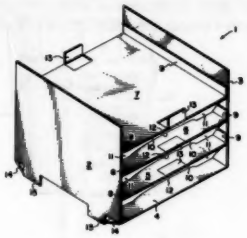
4,552,271
COLLAPSIBLE CONTAINER CONSTRUCTION

Kermit W. Kranz, 8160 W. Kochville Rd., Saginaw, Mich. 48603

Filed Mar. 27, 1984, Ser. No. 593,897
Int. Cl.[4] A47F *5/11*
U.S. Cl. 211—41 10 Claims

1. A container for supporting a plurality of similar items comprising a pair of spaced apart, parallel frame members; a plurality of shelf members secured to and spanning the space between said frame members, said shelf members being spaced from one another a distance sufficient to enable one of said items to be accommodated between adjacent shelf members; and retaining means carried by each shelf member which overlies another shelf member and having at least one footed portion of such length as at least to span the space between adjacent shelf members, each of said retaining means being

hinged to the associated shelf member for swinging movements between a first position in which the space between the associated shelf member and the adjacent shelf is clear and a



second position in which said retaining means forms a barrier between the associated shelf member and the adjacent shelf member.

4,552,272

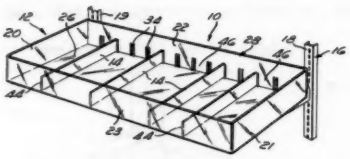
DISPLAY BIN

Frank P. Field, 854 Napoli Dr., Pacific Palisades, Calif. 90272

Filed Apr. 11, 1984, Ser. No. 599,193

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—88 **9 Claims**



1. A system for displaying or storing merchandise or the like, comprising:

a bin including a bottom panel, a pair of side panels, a front panel and a rear panel; the rear panel having at least one panel slot therein, the bottom panel including at least one orifice therein corresponding to each panel slot and spaced apart therefrom;

a divider having a first end adapted for insertion into the panel slot, the divider further including a projection extending therefrom into the orifice when the first end is positioned in the slot so that the panel slot, the projection and the orifice cooperate to retain the divider in a preset position to divide the bin into a plurality of portions while maintaining the front panel free of obstructions; and

a pair of barbs extending from said projection to engage the projection in the orifice to retain the divider against accidental removal from the preset position,

said pair of barbs being offset from one another along the length of the projection so that the projection may be engaged in the orifice by inserting a first barb into the orifice and then rotating the divider relative to the bottom panel to urge the second barb into the orifice.

4,552,273

PAPER MANAGEMENT SUPPORT RACK

Richard H. Wolters, Grand Rapids, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1984, Ser. No. 582,210

Int. Cl.[4] A47B *57/04*

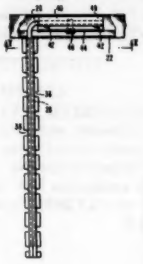
U.S. Cl. 211—187 **8 Claims**

1. A support rack for supporting a plurality of trays, shelves or the like within a larger storage cavity including an upper shelf having internal flanges on opposite sides of the underside thereof, said support rack comprising:

a pair of spaced L-spaced hanger bars;

a planar guide rack secured to one of the legs of each of said hanger bars and spanning the space therebetween; and

slidable wedging means secured to the other leg of each of



said hanger bars, each said slidable wedging means movable with respect to said other leg and engaging said internal flanges to rigidly mount said support rack between the underside of said upper shelf and said internal flanges on said upper shelf.

4,552,274

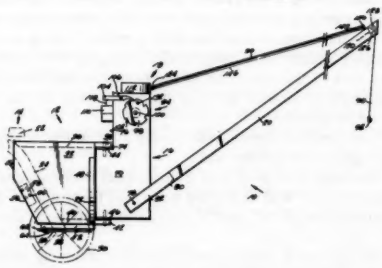
TRICYCLE AND A TOY CRANE ASSEMBLY REMOVABLY MOUNTED THEREON

Lawrence R. Lundin, 10057 Highway 2, Rapid River, Mich. 49878

Filed Jan. 3, 1984, Ser. No. 567,511

Int. Cl.[4] B66C *23/06*

U.S. Cl. 212—232 **3 Claims**



1. In combination, a tricycle and a toy crane assembly removably mounted to the rear of said tricycle, said crane assembly including a main frame member, means for removably mounting said main frame member to said tricycle, a swivel frame member pivotally mounted to said main frame member, a boom member pivotally attached to said swivel frame member and having a free outer end, boom adjustment means mounted on said swivel frame for changeably adjusting the position of the boom member relative to the swivel frame member, said boom adjustment means including a boom line extending from said swivel frame to the outer end of said boom, and running line adjustment means mounted to said swivel frame for adjustably operating a running line, said boom adjustment means icluding a first reel member rotatably mounted to the top of said swivel frame member for holding a supply of boom line, said first reel having a toothed periphery, a first pawl pivotally mounted adjacent said first reel member, resilient means for keeping said first pawl in an engaged position relative to said reel and line guide means for guiding the boom line between said first reel member and said boom member, said line guide line means further including centering means for keeping the boom line in the center of said first reel

member, said running line adjustment means including a second reel member rotatably mounted to said swivel frame member for holding a supply of running line, said second reel member having a toothed peripheral rim, a second pawl mounted adjacent said second reel member, resilient means for keeping said second pawl in a pawl engaged position and second line guide means for guiding the running line.

4,552,275

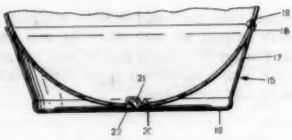
PRESSURIZED FLUID PACKAGE

Long F. Chang, Sylvania, and Frank Patek, Jr., Whitehouse, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 333,074, Dec. 21, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,264

Int. Cl.⁴ B65D *23/00, 23/08*

U.S. Cl. 215—12 R **18 Claims**



1. A pressurized fluid package comprising

an oriented plastic container including a cylindrical side wall, a neck, a neck finish on the upper end of the neck for receiving a closure, and a hemispherical bottom wall,

a plastic base including an annular seating area for engaging a surface on which the package is supported,

said base having a peripheral annular inverted frustoconical wall extending upwardly and outwardly and terminating in an annular frustoconical free edge portion defining an inner primary support area tangentially engaging a complementary area of the upper end of the hemispherical wall of the container to provide primary support axially for the container in the base,

said hemispherical bottom wall having a radius that is uniform throughout the bottom wall,

said free edge portion of said frustoconical wall engaging the hemispherical wall and being tangential thereto at an angle ranging between 50° and 75° with a transverse plane through the axis of the base,

said base having a second contact area for receiving adhesive to bond the hemispherical bottom wall of the container.

4,552,276

DRINKING VESSEL HAVING A HOLDER

Wolfgang Büch, Dorfstrasse 4, D-2359, Kisdorf, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,357

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 8314583[U]

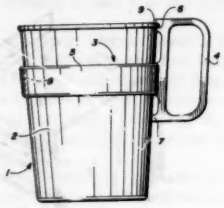
Int. Cl.⁴ B65D *21/02*

U.S. Cl. 215—100 A **6 Claims**

1. A holder for a drinking vessel having a generally circular exterior at any location and an open top with a lip extending circumferentially at the said top, said holder comprising:

(a) a ring member having an opening adapted to extend circumferentially about an intermediate section of the exterior of said vessel;

(b) a handle integrally formed with said ring and adapted for grasp by the user, said handle including upper and lower spaced-apart rests, said upper rest engaging said rim and said lower rest engaging the said vessel body at a location below the said ring, at least one of said rests having a diameter less than the corresponding engaged portion of the vessel whereby a prestressing force is applied on the



vessel wall when said one rest is placed in engagement with the vessel.

4,552,277

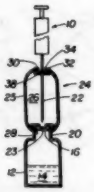
PROTECTIVE SHIELD DEVICE FOR USE WITH MEDICINE VIAL AND THE LIKE

Robert D. Richardson, 2202 Lakeland Rd., Anchorage, Ky. 40223, and Thomas B. Leanhart, 1113 Girard Dr., Louisville, Ky. 40222

Filed Jun. 4, 1984, Ser. No. 616,572

Int. Cl.⁴ B65D *81/32*

U.S. Cl. 215—249 **15 Claims**



1. A shield device adapted to be connected over the neck of a medicament vial and the like containing a liquid medicament, the vial being the type having a puncturable seal closing the vial neck adapted to be punctured by a hypodermic needle, the shield device comprising:

means defining a collapsable liquid medicament containing chamber adapted to receive and contain liquid medicament which may exit the vial through the puncture made in the vial seal upon withdrawal of the hypodermic needle from the vial seal;

means defining an opening at one end of the chamber defining means adapted to receive and seal around the neck of the vial;

means defining an aperture at the other end of the chamber defining means generally opposite the opening into the chamber defining means; and,

an imperforate, puncturable seal device closing the aperture in the chamber defining means, the seal being adapted to be punctured by a hypodermic needle.

4,552,278

CRIMPABLE CAPPING ASSEMBLY FOR A CENTRIFUGE TUBE

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1984, Ser. No. 666,616

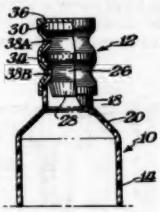
Int. Cl.⁴ B65D *45/02*

U.S. Cl. 215—277 **8 Claims**

1. A capping assembly for use with a centrifuge tube formed of a deformable material, the tube having a neck portion which defines a fluid port, the neck having a predetermined interior and exterior, the capping assembly comprising:

a stopper having a plug portion sized and configured for close fitting receipt on the interior of the neck; and

a sleeve sized and configured for close fitting receipt over the exterior of the neck in concentric telescopic relationship with respect to the plug, the sleeve being responsive



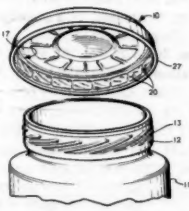
to a crimping force to deform and compress the material of the neck intermediate the plug and the sleeve to form an annular seal between the neck and the plug which resists fluid leakage out of the fluid port from the interior of the tube.

4,552,279

CONTAINER CLOSURE

Bruce M. Mueller, Sylvania, Ohio, and Zbignew Swierczek, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 14, 1984, Ser. No. 650,490
Int. Cl.[4] B65D *41/22*
U.S. Cl. 215—318 **8 Claims**



1. A container closure adapted to be applied to a container having threads by an axial movement and to be removed by a rotary movement to open the container comprising

a body including a base wall and a peripheral wall,

and a gasket of plastic material formed in situ along the peripheral wall and at least a portion of the base wall which is adapted to overlie the end of the container,

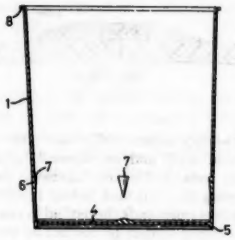
an annular portion of the gasket along the peripheral wall being formed with a plurality of circumferentially extending substantially flat surfaces such that it has a polygonal configuration in transverse cross section with axially extending channels at the junctures of the substantially flat surfaces such that when the closure is applied to the container, the threads on the container deform the surfaces of the polygonal portion by indentation to define complementary threads therein, and when the closure is being applied, the channels permit gases in the head space of the container to escape so that excessive pressurization tending to force the cap off does not occur and after the closure is applied to the container, the channels provide areas into which the plastic material may cold flow to release excessive stresses which develop during shelf life of the package comprising the closure and container, thereby resulting in lower removal torques.

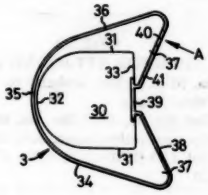
4,552,280

CONTAINERS FOR WASTE PRODUCTS

William R. Owen, 56 Heol Llanishan Fach, Rhiwbine, Cardiff, CF4 6LF., and Andras Juhasz, 53 Waterloo Rd., Cardiff, CF3 7BJ., both of Wales

Filed Nov. 26, 1982, Ser. No. 444,745
Claims priority, application United Kingdom, Nov. 26, 1981, 8135733
Int. Cl.[4] B65F *1/16*
U.S. Cl. 220—1 T **6 Claims**





1. A self-closing container for waste or contaminative articles comprising

a receptacle having an aperture through which articles are deposited in the container and a retaining projection,

a closure member secured to the receptacle and constrained for rectilinear sliding movement across the plane of the aperture between first and second positions at which the aperture is opened and closed respectively,

and means for releasably securing the closure member in its second position comprising a substantially non-stretchable, resiliently deformable band, engaged around said retaining projection on the receptacle and joined at both ends to the closure member and extending around the periphery of the closure member such that it has to be deformed against its resilience to move the closure member from its closed position, the resiliently deformable band having a first preset natural shape and predisposition, when the closure member is in its closed position, and a second shape, when the closure member is in its open position, which is a distortion of the first shape and from which the deformable band naturally returns to said first shape to close the container.

4,552,281

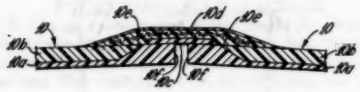
GLASS FIBER REINFORCED RESIN TANK WITH PARTICULAR JOINT STRUCTURE

William A. Schneider, Conroe, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 29, 1984, Ser. No. 626,071
Int. Cl.[4] B65D *8/06, 8/18*
U.S. Cl. 220—5 A **4 Claims**

1. An elongated generally cylindrical fiber-reinforced resin tank particularly adapted to contain corrosive liquids and comprising two tank halves each having a closed end and a

flangeless open end and each having an inner liner of corrosion-resistant resin and an outer structural wall of corrodible resin, the corrodible structural wall of each tank half ending short of the flangeless open end thereof in a direction axially of the tank and the corrosion-resistant inner liner of each tank half extending axially of the tank past an end of the structural wall of the tank half adjacent the flangeless open end thereof and being radially enlarged adjacent said flangeless open end thereby to cover said end of the structural wall and present a



radially outer surface substantially flush with the outer surface of the structural wall, and an external lay-up bridging the flangeless open ends of the tank halves on the outside of the tank and securing the two tank halves relative to each other with the flangeless open ends thereof adjacent each other, said external lay-up being subject to contact by corrosive liquid or vapors thereof when corrosive liquid is stored in the tank and at least a radially inner portion of the external lay-up comprising corrosion-resistant resin.

4,552,282

STRUCTURE FOR RETAINING TANK CAP

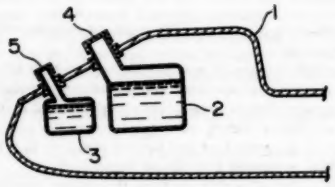
Hiroshi Nishida, Miki, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Jan. 22, 1985, Ser. No. 693,096

Claims priority, application Japan, Jan. 25, 1984, 59-8689[U]

Int. Cl.⁴ B65D *1/24, 1/36, 57/00*

U.S. Cl. 220—20 **6 Claims**



1. A tank cap retaining structure for use in a motorcycle, a small-sized marine craft or an agricultural machine in which a plurality of tanks, such as a fuel tank and an oil tank, are disposed side by side, said structure comprising:

tank caps of said tanks having respective outer surfaces which are formed such as to be capable of detachably engaging each other for the purpose of retaining said tank caps.

4,552,283

SAFETY DEVICE FOR CLAMPING SCREWS ON PRESSURIZED FLUID RECEPTACLES

Erich Poldner, Benningen, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 672,672

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341675

Int. Cl.⁴ B65D *53/00*

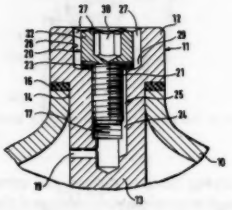
U.S. Cl. 220—304 **7 Claims**

1. A safety device for a clamping screw on a pressurized fluid receptacle comprising in combination;

a head and an adjoining threaded shaft defined by the clamping screw, the head having an internally faceted socket-type recess which is adapted for engagement by a matching wrench;

a threaded axial bore in the clamping screw extending from the bottom of the faceted recess into the shaft of the clamping screw;

a bleed screw having a threaded shaft and an adjoining head which, when the bleed screw is screwed into the threaded axial bore of the clamping screw, prevents access to the internally faceted recess by said wrench; and



a bleed channel defined between the clamping screw and the bleed screw, the bleed channel having a bleed channel inlet which is open to the interior of the pressurized fluid receptacle and a bleed channel outlet which is located in the immediate vicinity of the head of the bleed screw, so that, when the bleed screw is screwed tight, its head closes off the bleed channel outlet, and, when the bleed screw is unscrewed, it initially allows only a small flow of pressurized fluid to escape through the bleed channel outlet.

4,552,284

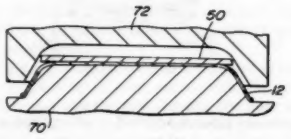
COOKWARE BOTTOM WALL STRUCTURE

Al S. Rummelsburg, Scarsdale, N.Y., assignor to Kidde Consumer Durables Corp., Bronx, N.Y.

Division of Ser. No. 403,828, Jul. 30, 1982, Pat. No. 4,511,077. This application May 30, 1984, Ser. No. 602,308

Int. Cl.⁴ B44D *1/14*

U.S. Cl. 220—453 **7 Claims**



1. Cookware comprising a stainless steel utensil having a bottom wall connected to an upstanding side wall by a curved portion, an aluminum disk metallurgically bonded directly to the bottom wall and the curved portion with a serrated key type interface, a central portion of said disk being thicker than the thickness of said utensil walls, said disk being thinner at its periphery, the thinned periphery of said disk overlying and terminating where the side wall joins said curved portion.

4,552,285

UNLOADING DEVICE

René Lüscher, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,564

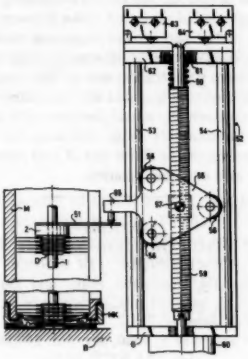
Claims priority, application Switzerland, Mar. 10, 1983, 1286/83

Int. Cl.⁴ B65G *59/06*

U.S. Cl. 221—13 **4 Claims**

1. Apparatus for the individual ejection of flat objects comprised of a flat, relatively rigid center part and an elastically deformable circumferential part, from a magazine in which the

objects are stacked on one another, said magazine including an ejection orifice with a retaining cam that projects inwardly from its wall, comprising an ejector actuable from the exterior of said magazine to apply pressure to said rigid center part of the objects, whereby the entire stack may be moved in the direction of the ejection orifice, a support surface, a holder for positioning the magazine such that its ejection orifice (66) is



located at a slight distance above the support surface, drive means for said ejector which induces a force on the ejector to eject an object from the magazine onto the support surface, and means responsive to the counter pressure created by the ejected object on said support surface for relieving the force on said ejector when said counter pressure reaches a limiting value.

4,552,286

METHOD AND AN APPARATUS FOR THE PRODUCTION AND DISPENSING IN PORTIONS OF NONCARBONATED MIXED DRINKS

Alexander Kückens, Gross Sarau, and Horst Köhl, Bad Oldesloe, both of Fed. Rep. of Germany, assignors to Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co. KG, Reinfeld, Fed. Rep. of Germany

Filed Sep. 20, 1983, Ser. No. 533,860

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3234957

Int. Cl.⁴ B67D *5/60*

U.S. Cl. 222—145 **3 Claims**

1. In a method of dispensing noncarbonated beverages, in which water is forced through an injection pump and a citrus concentrate is drawn by the injection pump into admixture with the water, the improvement which comprises the steps of:

following a discharge of said mixture to form a portion of a beverage dispensed, terminating the flow of water and admitting air to said ejection pump to completely discharge an injection zone thereof from said concentrate; and

maintaining air in said zone so that the air is encountered by said mixture for the formation of the next portion of the mixture to be dispensed and air bubbles are formed in said mixture to hold particles of said concentrate in suspension in the water of the mixture.

4,552,287

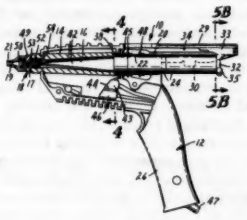
THERMOPLASTIC DISPENSING DEVICE

Michael M. Dziki, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 7, 1983, Ser. No. 456,346

Int. Cl.⁴ B67D *5/32*

U.S. Cl. 222—146.5 **13 Claims**



1. In a device for dispensing molten thermoplastic material comprising a frame, a barrel member mounted on said frame and having an internal melting chamber communicating with an outlet opening through a nozzle, a sleeve with a through opening having one end secured at said barrel member and said opening communicating with the end of said melting chamber opposite said outlet opening, said sleeve being adapted to receive a block of solid thermoplastic material with one end portion of the block in the melting chamber and the block projecting through said sleeve, and means for heating said barrel member to melt the end portion of the block therein, said frame including a handle positioned so that an operator can grip the handle with the fingers of one hand while applying pressure with the thumb of that hand directly toward the end of the block opposite the melting chamber to press the block through the sleeve and into the melting chamber to force molten thermoplastic material out said outlet opening, the improvement wherein:

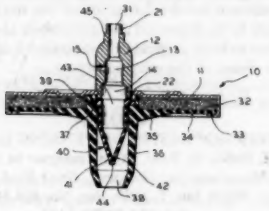
said device further includes holding means at the end of said sleeve opposite said melting chamber adapted for holding a second block of solid thermoplastic material outside said sleeve in aligned end-to-end relationship with a said block of thermoplastic material in said sleeve while affording pressure by the thumb of an operator to press the second block into the sleeve and melting chamber, said holding means comprising spaced opposed resiliently flexible gripping parts projecting towards said handle, said gripping parts having opposed distal surfaces spaced so that the second block can be transversely pressed therebetween to resiliently move the gripping parts away from each other and afford movement of the block therebetween, and having opposed inner surfaces adapted to engage the seocnd block of polymeric material along its opposite side surfaces to hold the second block in alignment with the block in said sleeve, while affording movement of the second block and the thumb of the operator between said gripping parts to move the seoond block toward said sleeve.

4,552,288

AUTOMATIC VENTING SEALING CAP

Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Des Plaines, Ill.

Filed Nov. 10, 1983, Ser. No. 550,605
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—482 **7 Claims**



1. An automatic vacuum venting sealing cap for use in conjunction with safety storage containers for fluids, said cap cooperating with and substantially sealing an opening in said container when in a first engaged position, and detaching from said opening to allow substantially unrestricted access to said opening for the introduction or removal of contents of the interior of said container through said opening when said cap is in a second disengaged position, said cap including mounting means for cooperating with a mounting bracket, wherein said mounting bracket transports said cap between said engaged and said disengaged positions and retains said cap in sealing engagement with the top edge of a collar surrounding said opening when in said engaged position, said cap also including a cover whose perimeter dimensions are at least equal to the perimeter dimensions of the top edge of the collar surrounding the container opening, and further including a sealing gasket proximate to at least the periphery of the cover such that the sealing gasket is disposed between the cover and the upper edge of the collar surrounding the opening when the cap is in the engaged position, providing a substantially fluid and vapor tight seal between the cover and the collar, wherein the cover has connecting means connecting it to said mounting means and provides mechanical support for said gasket, the invention comprising:

said mounting means including an air passageway therein with a first open end which is exterior to said container when said cap is in said engaged position, and with a second open end proximate said mounting means and said cover and extending through said cover;

valve means, said valve means permitting passage of air therethrough in a first direction while substantially impeding passage of air therethrough in a second opposite direction.

said valve operably connected to said second open end of said passageway and communicating with the container opening when said cap is in said engaged position, such that said valve permits the passage of air in a forward direction into said first open end of said passageway, through said passageway, through said second open end of said passageway, through said valve means, and into the interior of said container, while substantially preventing the passage of air or contents from the interior of said container through said passageway in a second opposite direction;

said valve means including a reed valve element, said reed valve element describing a vent passageway having a flanged first end and a second end tapering from said first end, with a flexible orifice at said second end,

said flanged first end of said reed valve element sealably engaged with said second open end of said air passageways to substantially prevent passage of air between said air passaageway and the interior of said container other than through said flexible orifice,

said gasket including a deformable cushion proximate said cap and a flexible covering for contacting said upper edge of said collar;

and means substantially encasing said valve means for mechanically protecting said valve means from potentially damaging contact with foreign objects,

said valve protection means comprising a protruding cylindrical shroud substantially surrounding said reed valve element,

the first end of said shroud sealably engaging and supporting said flange end of said reed valve element,

the second end of said shroud proximate said flexible orifice and providing an opening through which said orifice may communicate with the interior of said container;

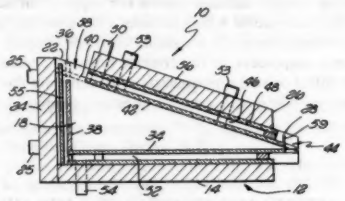
said flexible covering and said shroud defining a vapor tight integral unit which, in conjunction with said reed valve element, substantially seals said container opening from passage of vapors or fluids out of said opening when said cap is in said engaged position.

4,552,289

TUNDISH FOR RIBBON CASTING OF SEMICONDUCTOR RIBBON

G. Felix Wakefield, Woodland Hills, and David L. Bender, Thousand Oaks, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 8, 1980, Ser. No. 147,804
Int. Cl.[4] B22D *11/10*
U.S. Cl. 222—600 **8 Claims**



1. A tundish useful in casting a ribbon of material comprising:

a hopper for the molten material having a bottom plate and at least two side wall plates and a top plate, said top plate converging with said bottom plate to form an elongated orifice for extruding the material therethrough, at least one of said top plate and bottom plate being movable with respect to said other of said top plate and bottom plate to change the thickness of said orifice; and

a heating element to provide heat to the molten material, including at least a portion having a substantially flat configuration oriented substantially parallel to a surface of one of said top and bottom plates, said surface being opposite the surface of said plate for facing the molten material within the hopper.

4,552,290

METHOD AND APPARATUS FOR CLEAVING OPTICAL FIBERS

Tadeusz Szostak, Gillette, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jan. 31, 1983, Ser. No. 462,571
Int. Cl.[4] C03B *37/16*
U.S. Cl. 225—2 **8 Claims**

1. An apparatus for cleaving an elongate optical fiber comprising:

a housing;

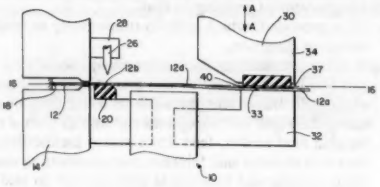
a holder on said housing fixedly supporting said fiber thereat, said holder defining a pre-determined fiber axis;

a fiber support on said housing for supporting a longitudinal

extent of said fiber spaced from said holder along said pre-determined fiber axis;

a cleaving element movably supported on said housing adjacent said fiber support for scoring said fiber at said longitudinal extent; and

a fiber pulling means for grasping said fiber at a location spaced from said fiber support and for pulling said fiber in



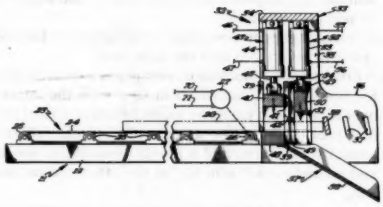
a direction parallel to said fiber axis, said pulling means including a clamping member having a fiber engaging surface movable transversely relative to said fiber axis, independently of the movement of said fiber pulling means from a first position non-intersecting said fiber axis to a second position intersecting said fiber axis for thereby moving a portion of said fiber to a clamping position offset from said fiber axis.

4,552,291

APPARATUS FOR BREAKING RAILROAD RAILS

Jeffery L. Schott, 1142 Featherstone Rd., Box 20, Red Wing, Minn. 55066

Filed Aug. 1, 1983, Ser. No. 519,309
Int. Cl.[4] B23P *17/02*
U.S. Cl. 225—96.5 **10 Claims**



1. A portable apparatus for breaking elongate railway rails into predetermined lengths for use as scrap metal, comprising:

a trailer having a bed and having ground-engaging wheels and adapted to be towed to an operational site by a prime mover,

an elongate infeed conveyor on said trailer bed and having an infeed end and a discharge end for moving a plurality of rails to be broken in side by side relation towards the discharge end thereof,

a rail breaker device mounted on said trailer bed and adjacent the discharge end of said infeed conveyor and including a support frame,

a stop member mounted on said support frame in longitudinally spaced relation with respect to the discharge end of the infeed conveyor and being disposed in obstructing relation with respect to rails moved by said infeed conveyor whereby an end of each rail moved by the infeed conveyor will engage the stop member,

an anvil plate mounted on said support frame between said stop member and the discharge end of the infeed conveyor,

a vertically shiftable clamping and scoring member disposed in opposed relation with respect to said anvil plate and being vertically translatable towards and away from said anvil member,

first power means connected to said clamping and scoring member and mounted on said support frame for shifting said clamping and scoring member towards and away from said anvil plate, said clamping and scoring member when shifted toward said anvil plate clamping said rail against the anvil plate and scoring the rail to be broken along a line extending transversely of the rail,

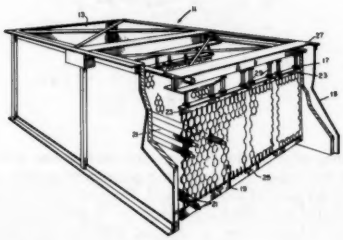
a vertically shiftable impact member disposed between said clamping and scoring member and said stop member and vertically translatable in a forward and return direction, second power means connected to said impact member and mounted on said support frame adjacent said first power means for shifting said impact member in forward and return directions, said impact member when shifted in a forward direction simultaneously striking the rails clamped by said clamping and scoring member and breaking said rails along the scored transverse lines.

4,552,292

HEAT EXCHANGER

Richard T. Cuscino, Andover; Lester H. Lee, Braintree; Melvin A. Prohl, Boxford; David R. Skinner, Georgetown, and Thomas F. Taylor, Salem, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Nov. 12, 1982, Ser. No. 440,800
Int. Cl.[4] B23P *15/26*
U.S. Cl. 228—183 **5 Claims**



1. A method of making a heat exchanger box of the type comprising a plurality of individual fluid carrying serpentine tubes each connected to a common inlet header and a common outlet header; the serpentine tubes being collectively supported from support beams as a plurality of tube modules in the heat exchanger box by a plurality of tube support sheets including convergent-divergent tube hanger straps; the method comprising the steps of:

prefabricating each serpentine tube from inlet to outlet prior to assembly into a tube module;

alternately stacking the serpentine tubes with tube hanger straps to form a plurality of tube support sheet sections and a tube module;

hanging a plurality of tube modules from a plurality of support beams; and,

joining adjacent individual tube support sheet sections aligned in the same plane to form a plurality of tube support sheets.

4,552,293

CONTAINER BLANK HAVING RELIEVED EDGE CONSTRUCTION

Bobby W. Blagg, Waco, Tex., and Richard F. Gulliver, Tuscaloosa, Ala., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed Oct. 25, 1983, Ser. No. 545,277
Int. Cl.[4] B65D *3/04*
U.S. Cl. 229—1.5 B **18 Claims**

1. A flat blank of foldable sheet material cut and scored to be erected and secured into a container comprising

a pair of peripheral wall forming sections and a bottom wall forming section integrally interconnecting said pair of peripheral sections in spaced relation,

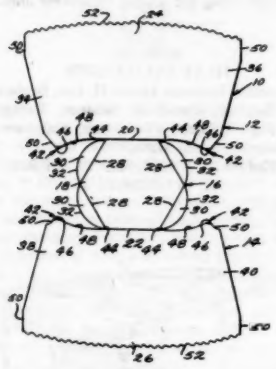
the interconnection between said bottom section and said pair of peripheral sections being along straight parallel fold lines,

said bottom section having a plurality of flaps formed integrally with the remaining periphery thereof between the corresponding ends of said parallel fold lines,

the interconnection between said bottom section and each of said flaps being along a straight fold line defining a portion of the periphery of the bottom section,

each peripheral section including opposed side portions disposed outwardly of the associated parallel fold line,

each side portion providing an edge extending from the end of the associated parallel fold line which includes (1) a corner



forming edge portion for engaging the fold line of the associated flap when the associated peripheral section is folded about its parallel fold line with the bottom section and the associated side portion is flexed into a position wherein the corner edge portion is engaged with the fold line of the associated flap and (2) a relieved edge portion for enabling the associated flap to be folded upwardly without engagement between the relieved edge portion and the interior surface of the associated flap as the flap is folded upwardly when the corner edge portion is disposed in engaged relation to the fold line of the associated flap as aforesaid to a position insuring that further upwardly folded movement of the flap will cause the adjacent side portion to move simply without interference between the relieved edge portion and the interior surface of the associated flap into surface to surface engagement therewith.

4,552,294

GRIPPING FEEDER FOR STRIP OR WIRE STOCK

Frank Rotzler, Maulbronn, Fed. Rep. of Germany, assignor to R W M-Raster-Werkzeugmaschinen GmbH, Oetisheim, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 556,086

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247001

Int. Cl.[4] B65H *17/36, 17/44*

U.S. Cl. 226—142 **3 Claims**

1. In a gripping feeder for an intermittent feeding of continuous stock in a predetermined direction in an intermittently operated machine for processing said stock, comprising

a stationary retaining gripper,

a carriage preceding said retaining gripper when viewed in said predetermined direction and reciprocable in and opposite to said predetermined direction,

a feeding gripper mounted on and movable in unison with said carriage,

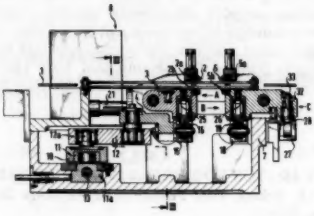
a first actuating mechanism for opening and closing said retaining and feeding grippers in phase opposition to each other in step with the intermittent operation of said machine, and

a second actuating mechanism for reciprocating said carriage and feeding gripper in and opposite to said predetermined direction in step with the intermittent operation of the machine,

the improvement residing in that

a rail is provided, which extends transversely to said predetermined direction,

said second actuating mechanism comprises a feed rocker extending transversely to said predetermined direction, a slider, which is mounted on said feed rocker to be slidable along the same and along said rail and defines a fulcrum for said feed rocker, feed drive means for oscillating said feed rocker about said fulcrum, and transmitting means for reciprocating said carriage in and opposite to said predetermined direction in response to said oscillation of said feed rocker, and



means are provided for holding said slider in a selected position relative to said rail so that the stroke length of said carriage depends on the position of said slider relative to said rail, wherein

said feeding gripper comprises a movable jaw formed by a jaw arm pivoted to said carriage, and

said first actuating mechanism comprises a camwheel, means for rotating said camwheel in step with the intermittent operation of said machine, a cam follower rocker having a first rocker arm cooperating with said camwheel and a second rocker arm, and a plunger bearing at one end on said second rocker arm and at the other end on said jaw arm,

said means for rotating said camwheel comprise a rotary shaft extending in said predetermined direction,

said camwheel being axially slidably mounted on and non-rotatably connected to said shaft,

a guide rod is provided, which is parallel to said shaft and together with said shaft constitutes a track, and said carriage is slidably mounted on said track.

4,552,295

ANTI-WRINKLE DEVICE

Gary R. Smith, Overland Park, Kans.; Larry J. Rutter, Blue Springs, Mo., and James E. Amer, Kansas City, Kans., assignors to Smith R.P.M. Corporation, Overland Park, Kans.

Filed Oct. 23, 1984, Ser. No. 663,795

Int. Cl.[4] D06C *3/06;* **B65H** *25/26, 17/22*

U.S. Cl. 226—195 **12 Claims**

1. An anti-wrinkle device for controlling wrinkles in a moving elongate paper web engaging said device; said device comprising:

(a) a support structure;

(b) said support structure including a central shaft;

(c) first and second supporting members;

(d) first and second surfaces adapted to engage a side of the web and being supported by said first and second supporting members respectively, each of said first and second surfaces having a respective first end and a second end;

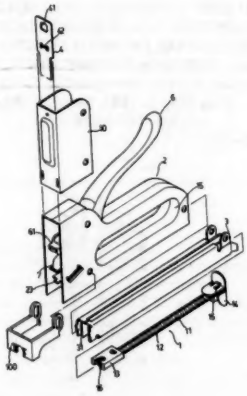
(e) said first and second supporting members are each rotatable about said shaft such that said first and second surfaces rotate about an axis associated with said shaft;
(f) said surfaces are generally cylindrical with approximately equal diameters;
(g) said surface first ends are closely spaced from one another;
(h) eccentricity adjusting means associated with each of said surfaces and cooperating with said first and second sup-

porting members to allow rotation of each of said surfaces about an axis thereof and to allow independent eccentric adjustment of said surfaces relative to each other; and
(i) eccentricity positioning means cooperating with said eccentricity adjusting means to allow selective positioning of the eccentricity of each surface relative to each other;
(j) whereby the eccentricity of one of said surfaces relative to another is selectively variable whereat said surfaces respectively engage said web.

4,552,296
STAPLING GUN

Wang Sheng, 4F. No. 2, Lane 350, Chung Ho Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed Oct. 19, 1983, Ser. No. 543,483
Int. Cl.[4] B25C *1/02*
U.S. Cl. 227—109 **1 Claim**

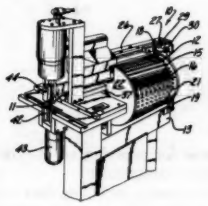


1. A stapling gun comprising:
a main body portion;
a handle pivotally mounted on said main body portion;
a guide way mounted into the lower part of said main body portion, said guide way being provided with two vertical plates so that the vertical distance between the inner top surface of said guide way and the top of any one of the vertical plates is less than two times the thickness of the thinnest staple adapted for use with the guide way;
a pusher detachably mounted into said guide way so as to push staples accommodated in said guide way to go forward, said pusher being provided with an inverted U-shaped head portion which is just fitted between said inverted U-shaped head portion and said guide way;
a driver movably mounted into said main body portion for pressing out staples therein, said driver being slightly thinner than the side thickness of a staple with smallest side thickness which is adapted for use with said guide way and slightly less wide than the width between the two vertical inner surfaces of said guide way;
a covering plate mounted on the front of said main body portion; and
an adjustable wire attachment movably mounted at the lower part of said covering plate, said adjustable wire attachment being provided with a notch for protecting and fixing a wire to be held in position, and two lugs each located at one side of said wire adjustable attachment and having a slot.

4,552,297
ROTATABLE RELOADING APPARATUS FOR A STAPLER

James A. Belanger, Northville; Douglas J. Calvin, Farmington Hills, and Brian K. Thompson, Wixom, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Jul. 22, 1983, Ser. No. 516,033
Int. Cl.[4] B25C *1/04, 5/02;* B21J *15/28*
U.S. Cl. 227—120 **6 Claims**



1. A reloading apparatus in combination with a magazine and a pneumatically operated fastening device, with said reloading apparatus effective to supply fasteners to said magazine for said fastening device comprising:
a frame;
a fastener storage unit for supplying fasteners to be loaded into said magazine mounted on said frame;
said fastener storage unit including a plurality of rails adapted to receive the fasteners fixed to a support rotatably mounted on said frame having a central axis about which said rails rotate with each rail being aligned parallel to the central axis;
a pneumatically operated pusher member in operative communication with said storage unit pushing fasteners toward said magazine until contacting a first limit switch on a loading stroke, returning from said magazine to retrieve additional staples on a return stroke until contacting a second limit switch;
a two-way switching means controlling said pusher member operatively responding to said first and second limit switches;
indexer means operably attached to said support for rotating said support incrementally and positioning another of said rails relative to said pusher member;
said indexer means including a hub secured to said supprot coaxial with the central axis of said support;
a one-way clutch secured to said hub;
an arm connected to the clutch and extending radially outwardly from the clutch;
a pneumatic cylinder attached to the frame and operably connected to the arm for arcuately pivoting the arm about the central axis;
said pneumatic cylinder being actuated by said second limit switch when said second limit switch is contacted by said pusher member on the return stroke;

a third limit switch adapted to be engaged after the arm has pivoted a predetermined amount to cause the pneumatic cylinder to pivot the arm in the opposite direction about the central axis; and

a shunting means connecting said two-way switching means with said pneumatically operated fastening device thereby preventing the latter from operating when said pusher member is in the return stroke.

4,552,298

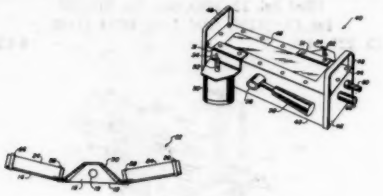
APPARATUS FOR ATTACHING AN UNDERWATER EXPLOSIVE PAD EYE

Terry E. Hill, Thornville; George R. Riley, Grove City; Vonne D. Linse, Columbus; Sheryll C. Green, London, all of Ohio, and Paul G. Tack, Witchita Falls, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1983, Ser. No. 490,016

Int. Cl.[4] B23K *20/08*

U.S. Cl. 228—2.5 **12 Claims**



1. An apparatus for applying an explosive pad eye to an underwater surface, comprising:

a housing, said housing including four sides and a top, said top having a clear area through which the inside of the housing may be seen;

a gas inlet passing through one of said four sides of said housing for admitting compressed gas into said housing and forcing out any water;

a sealing means mounted on the bottom edge of said four sides of said housing for creating a watertight seal between said housing and said surface, said sealing means being continuous and encircling the entire bottom of the housing except for one opening on the side opposite the side containing the gas inlet for allowing water from inside the housing to escape; and

an explosive pad eye including two wing portions and explosive charges connected to each of said wing portions;

wherein said housing is placed on said surface, gas is introduced into said housing through said gas inlet forcing water out of said housing through said opening in said sealing means and said explosive charges are detonated, causing said wing portions to be welded to said surface.

9. A metallic pad eye for application to a metallic underwater surface, comprising:

a base member including a central portion and two wing portions, extending in opposite directions from said central portion, which are bent upwardly at an angle of approximately 12 degrees, said base member being formed from a strip of metal;

a protrusion on the bottom surface of said wing portions adjacent said central portion;

two flange members connected to opposite edges of said central portion, each of said flange members having an opening arranged opposite the opening of the other flange member; and

an explosive charge connected to each of said wing portions which, when detonated, force said wing portions downwardly into contact with said underwater surface to form a weld which holds said pad eye to said underwater surface, wherein said protrusion serves to cut through the film of water on the underwater surface upon detonation of said explosives and permits initiation of the weld.

4,552,299

INTERMEDIATE ACCUMULATING SYSTEM IN PROCESSING STRIP MATERIAL

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06720

Continuation of Ser. No. 421,067, Sep. 22, 1982, , which is a continuation of Ser. No. 162,681, Jun. 25, 1980, abandoned. This application Jun. 4, 1984, Ser. No. 616,665

Int. Cl.[4] B23K *31/02*; B21C *49/00*, *47/26*

U.S. Cl. 228—5.7 **16 Claims**

1. A plant for producing metal strips, comprising

(a) a central intermediate storehouse for partly processed strips containing a plurality of variable capacity strip accumulators,

(b) strip guiding tracks from said storehouse to and from strip processing lines situated at various locations in said plant, and

(c) strip guiding tracks and reconnecting means within said storehouse to connect and/or disconnect strip arriving from, or destined to, said strip processing lines at said plant with selected accumulators at said storehouse.

4,552,300

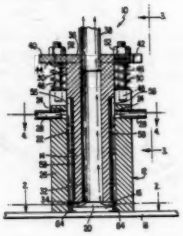
METHOD AND APPARATUS FOR SOLDERING AND DESOLDERING LEADLESS SEMICONDUCTOR MODULES FOR PRINTED WIRING BOARDS

Carl B. Zovko, Melbourne, Fla., and Alan D. Vogel, Columbia, Md., assignors to Pace, Incorporated, Laurel, Md.

Filed May 9, 1983, Ser. No. 492,989

Int. Cl.[4] B23K *1/12*

U.S. Cl. 228—20 **9 Claims**



1. A device for soldering semiconductor modules having contact pads on the bottom thereof to and desoldering them from leaded terminal surfaces on a printed wiring board, said device comprising:

(a) a housing member having a longitudinally extending bore therethrough defined by a wall, said bore having a first opening adjacent one end of said housing adapted to enclose said module while said module is on said leaded terminal surfaces,

(b) an inner member slidable in said bore,

(c) means for supplying air under pressure between said wall and said inner member, said inner member having a passageway connecting an intake port at one end of said inner

member to a source of vacuum connected to an exhaust port at the other end of said inner member, and

(d) means for heating said air under pressure as it passes between and contacts said wall and said inner member to thereby melt said leaded terminal surfaces to enable soldering or desoldering of said module when said first opening of said housing member is brought to a position adjacent said module.

4,552,301

METHOD OF BONDING CERAMIC COMPONENTS TOGETHER OR TO METALLIC COMPONENTS

Manfred R. Liehr; Wolfgang Nolting, both of Hamburg; Rolf U. D. Kobs, Tornesch, and Reiner U. Orlowski, Quickborn, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1984, Ser. No. 585,706
Int. Cl.⁴ B23K *35/28, 20/16*
U.S. Cl. 228—263.12 **4 Claims**

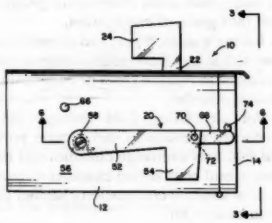
1. A method for the force-coupled and vacuum-tight bonding of ceramic components together or to metallic components by means of thermocompression by using a soldering material provided between the components to be bonded prior to the thermocompression process, characterized by the use of a soldering material of an aluminum-zinc-magnesium alloy having the composition 91.1 to 97.7% by weight of Al, 1.6 to 5.3% by weight of Zn and 0.5 to 3.6% by weight of Mg.

4,552,302

MAILBOX WITH INDICATOR FLAGS

Chester E. Rung, 7000 Seward Ave., Lincoln, Nebr. 68507

Filed Jul. 24, 1984, Ser. No. 633,847
Int. Cl.⁴ A47G *29/12*
U.S. Cl. 232—35 **7 Claims**



7. A mailbox apparatus comprising:

an elongated enclosure provided with an opening through which mail may be inserted and removed;

a door hinged to said enclosure to selectively cover and uncover said opening, said door being closed when said opening is substantially covered and opened when said opening is substantially unobstructed;

a first elongated indicator flag pivotally attached to a first side portion of said enclosure, said first indicator flag being pivotable between a non-vertical position and a substantially vertical position;

a stop attached to said first side portion of said enclosure to prevent said first indicator flag from rotating past said substantially vertical position;

means biasing said first indicator flag towards said substantially vertical position;

means for retaining said first indicator flag in said non-vertical position when said door is closed including a first stud attached to said door, a first link pivotally attached to said first indicator flag and engagable with said first stud, a stop attached to said first indicator flag to limit the rotation of said first link, and means biasing said first link towards said stop attached to said first indicator flag;

a second elongated indicator flag pivotally attached to a second side portion of said enclosure, said second indicator flag being pivotable between a non-vertical position and a substantially vertical position;

means biasing said second indicator flag towards said non-vertical position; and

means for retaining said second indicator flag in said vertical position when said door is closed, including a second stud attached to said door, and a second link pivotally coupled to said second indicator flag and engagable with said second stud;

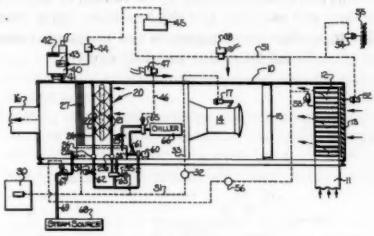
whereby the opening of said door causes said first indicator flag to pivot to said substantially vertical position and said second indicator flag to pivot to said substantially non-vertical position.

4,552,303

AIR-CONDITIONING SYSTEM

Gary H. Fisher, and H. Pat Padgett, both of Rockingham, N.C., assignors to Industrial Sheet Metal & Mechanical Corp., Rockingham, N.C.

Filed Sep. 7, 1982, Ser. No. 415,577
Int. Cl.⁴ F24F *3/02*
U.S. Cl. 236—44 C **6 Claims**



1. An energy efficient method for cooling and conditioning the air being supplied to an air-conditioned area, said method comprising directing a flow of air along a predetermined path to the air-conditioned area, contacting the air in its course of travel to the conditioned area with a spray of water to cool and condition the air by discharging water from a plurality of spray nozzles arranged in opposed impinging pairs and mounted in the path of travel of the air so to form a fine spray extending fully across the flow path of the air, sensing the dry bulb temperature of the air in the air-conditioned area, reducing the flow rate of the air being directed to the air-conditioned area in response to the sensing of a reduction in the dry bulb temperature in the air-conditioned area so as to maintain the dry bulb temperature substantially constant, correspondingly reducing the volume of spray water contacting the air so as to maintain a predetermined ratio between the volumes of spray water and air flow by reducing the volume of water supplied to one of the spray nozzles of each pair without reducing the volume of water supplied to the other nozzle of the pair so as to maintain a fine spray extending fully across the flow path of the air, and also varying the temperature of the spray water in response to changes in the dew point of the air in the air-conditioned area so as to maintain the dew point at a predetermined level.

4,552,304

ELECTRONIC GAS VALVE PULSATOR

Arthur S. Papazian, 8010 Owensmouth Ave., Canoga Park, Calif. 91304

Filed Mar. 22, 1984, Ser. No. 592,073
Int. Cl.⁴ F23N *5/20*
U.S. Cl. 236—46 F **5 Claims**

1. An electronic gas valve pulsator for a gas fired furnace controlled by a room thermostat, comprising:

a plastic housing adapted to be mounted on a wall of a room,

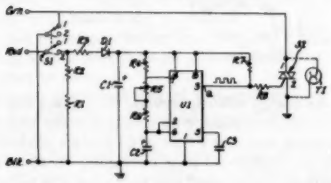
said housing having an opening therein with a manually operable control member extending therethrough and movable therein;

two scales associated with said opening and indicating pulse duration and furnace efficiency, respectively, for any selected setting of said control member;

an electronic timer housed in said housing for generating a series of electrical pulses having a preselected frequency and duty cycle as determined by the setting of said control member relative to said scales;

an electronic solid-state switch mounted in said housing and controlled by said electronic timer, said solid-state switch being connected in series, in use, with a gas valve of said gas fired furnace for alternately energizing and deenergizing said valve in response to said electrical pulses, whereby said valve is in the fully-open position when energized and in the fully-closed position when deenergized;

a time constant network connected to said electronic timer for controlling said electronic timer, said time constant network comprising first, second and third resistors connected in series and in series with a capacitor, said second resistor being connected intermediate said first and third resistors and being adjustable by movement of said control member, and said first and third resistors being fixed in value to predetermine maximum and minimum values of said pre-selected frequency and duty cycle;



a manually operable double pole switch mounted in said housing for separately disabling both said electronic timer and said electronic switch, whereby in use when said manually operable switch disables said electronic timer and said electronic switch, said gas valve will be in the fully-open position when said room thermostat is closed and in the fully-closed position when said room thermostat is open;

control wiring connected to said switch for connection to controls of said furnace;

a rectifier network connected between said double pole switch and said time constant network for supplying said time constant network and said electronic timer with a rectified D.C. voltage when said double pole switch is connected to a supply of A.C. voltage; and

a safety thermostat mounted in said housing and connected in a parallel across said electronic switch for energizing said valve independently of said electronic switch when the ambient temperature in the vicinity of said housing drops below a pre-determined minimum value and said manually operable switch has not been operated to disable said electronic timer and said electronic switch, said safety thermostat preventing the ambient temperature of the room from dropping to freezing in the event of a failure of the electronic gas valve pulsator.

4,552,305

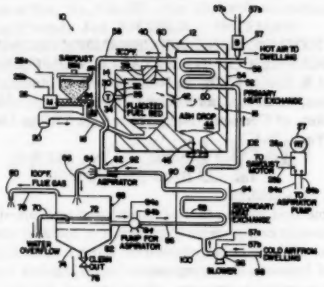
FURNACE

Reagan Houston, 252 Foxhunt Dr., Long John Mountain, Hendersonville, N.C. 28739

Filed Mar. 25, 1985, Ser. No. 717,941

Int. Cl.[4] F24D *5/10*; F23G *5/02*; F22B *1/02*

U.S. Cl. 237—69 **6 Claims**



5. A furnace comprising,

a combustion chamber and a separate heat exchange chamber and a transfer port connecting said combustion chamber and said heat exchange chamber in gas flow relationship,

heat exchange means in said heat exchange chamber and means for circulating heat exchange fluid in heat exchange relationship with said heat exchange means,

inlet means for fuel and, combustion air into said combustion chamber and means for feeding fuel and air at controlled ratio into said combustion chamber to produce combustion of fuel into gases of combustion,

an aspirator having a suction port and an outlet, said suction port connected in gas flow relationship to said heat exchange chamber to receive gases of combustion from said heat exchange chamber,

and means for circulating fluid through said aspirator thereby reducing pressure in said suction port to reduce pressure in said heat exchange chamber and in said transfer port and in said combustion chamber to cause combustion air to flow into said combustion chamber through said inlet for combustion air.

4,552,306

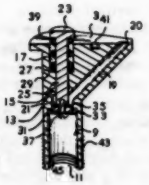
DRINKING FOUNTAIN DEVICE AND COMBINATION SINK AND DRINKING FOUNTAIN DEVICE

Alfred A. Litwak, Box 40, R.D. 1, Frenchtown, N.J. 08825, and Laurene H. O'Donnell, R.D. 1, Box 333AA, Milford, N.J. 08848

Filed Oct. 26, 1982, Ser. No. 436,848

Int. Cl.[4] E03B *9/20*

U.S. Cl. 239—29 **3 Claims**



1. A single-stream drinking fountain device for substantially horizontal mounting, said device comprising

a bracket having a substantially planar top surface and a

bottom surface spaced apart from (each other) said top surface, said bottom surface forming a substantially horizontal plane at said baseline, said bracket having an orifice in said top surface,

a housing (connected to said bottom surface of said bracket and) extending downward (therefrom) from said bottom surface, said housing containing (faucet) valve means located essentially below said baseline, said (faucet) valve means having an inlet and an outlet, said inlet being connectable to a source of water, said water retarded from passing through said inlet to said outlet by an off-on mechanism located at said top surface of said bracket and being substantially flush with said top surface and having a linkage through said housing to said (faucet) valve means, said off-on mechanism and said orifice both located in the same planar portion of said top surface, and

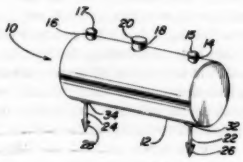
a single conduit connected between said outlet of said (faucet) valve means and said top surface orifice, said conduit projecting upwardly from said (faucet) valve means to connect said (faucet) valve means with said orifice so that water passing through said (faucet) valve means also passes through said top surface orifice in a generally upwardly moving direction.

4,552,307

PET REPELLENT DEVICE

Yolanda Stedham, 823 N. Austin Ave., Apt. 2, Inglewood, Calif. 90302

Filed Aug. 3, 1983, Ser. No. 519,968
Int. Cl.⁴ A01M *13/00*
U.S. Cl. 239—57 **1 Claim**



1. A device for holding and dispensing pet repellent comprising:

pet repellent;

a container for holding said repellent;

means for standing said container on the ground;

venting means consisting of two holes in the top of said container;

a vent cap symetrically located over each of said holes, said vent cap having a hemispherical dome shape slightly larger than said holes on the top of said container;

adjusting means of said venting means, said adjusting means of said venting means consisting of a bolt with a locknut attached thereto, said bolt mating with a nut attached to a web member in said holes in said container whereby turning said bolt and adjusting and tightening said locknut changes and fixes the gap between said cap and a circular ridge on said container and therefore changes the rate of venting said repellent to the atmosphere.

4,552,308

TURBINE ENGINE VARIABLE GEOMETRY DEVICE

Casimir Rogo, Mt. Clemens, and Herman N. Lenz, Lambertville, both of Mich., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 22, 1980, Ser. No. 199,469
Int. Cl.⁴ B05B *15/00*
U.S. Cl. 239—457 **10 Claims**

1. A turbine nozzle for a turbine engine comprising:

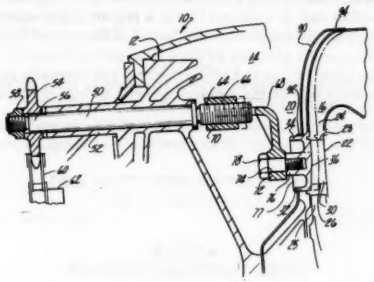
a support housing,

a combustion chamber contained within the support housing and having an exhaust outlet,

said support housing having a pair of spaced walls which form an annular nozzle passageway having its outer end open to said exhaust outlet,

said nozzle passageway having an annular opening formed along one nozzle wall,

an annular ring slidably mounted in said opening and having an axial end exposed to said nozzle passageway,



means for moving said ring transversely across said passageway between a retracted position and an extended position in which said ring protrudes into and restricts said nozzle passageway, and

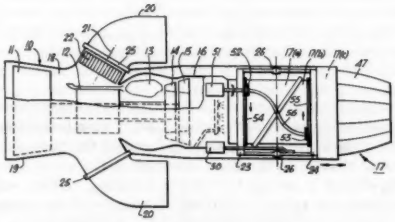
a plurality of circumferentially spaced vanes secured to the other nozzle wall and protruding into said nozzle passageway and wherein said ring includes a plurality of slots which register with and slidably receive said vanes.

4,552,309

VARIABLE GEOMETRY NOZZLES FOR TURBOMACHINES

Gary F. Szuminski, Marietta, Ga., and Thomas J. Jones, Bristol, England, assignors to Rolls-Royce Inc., New York, N.Y. and Rolls-Royce Limited, London, England

Continuation of Ser. No. 376,389, Apr. 7, 1982, abandoned. This application Jan. 30, 1985, Ser. No. 696,869
Int. Cl.⁴ B63H *11/10*
U.S. Cl. 239—265.19 **7 Claims**



1. An exhaust nozzle for a gas turbine engine comprising a duct extending along an axis and having at a downstream end thereof a mechanism for varying the geometry and area of the nozzle, the mechanism comprising an axially translatable member which has a face extending in a direction transverse to the axis of the duct against which pressurised gases flowing through the duct acts to bias the member in a direction along the duct, a plurality of first flaps spaced circumferentially around the axis of the duct each of which is pivotally attached at its upstream end to the axially translatable member, each first flap being provided with a cam follower that co-operates with a cam that is fixed relative to the fixed duct thereby to define the attitude of each first flap relative to the member, a

plurality of first seal plates each of which is pivotally attached at an upstream end to the member and positioned to cover the gap between adjacent first flaps, a set of circumferentially spaced second flaps each of which is pivotally attached at its upstream end to the downstream end of a first flap, a plurality of second seal plates each of which is pivotally attached at an upstream end to the downstream end of one of the first seal plates and positioned to cover the gap between two adjacent second flaps, a plurality of struts each of which is pivotally connected at one end to the member and pivotally connected at another end to a second flap at a region of the second flap downstream of the pivotal attachment of the second flap to the first flap, and a plurality of third flaps each of which is pivotally attached at one end to the member and pivotally attached at its other end to the downstream end of one of the second flaps.

4,552,310

FUEL INJECTION NOZZLES

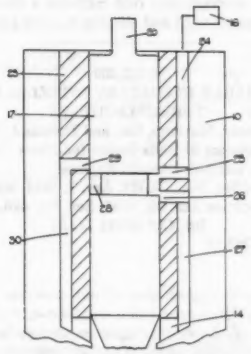
David J. Gaskell, Sudbury, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jun. 29, 1984, Ser. No. 626,070

Claims priority, application United Kingdom, Jul. 16, 1983, 8319284

Int. Cl.[4] F02M *47/06*

U.S. Cl. 239—533.5 **4 Claims**



1. A fuel injection nozzle of the so-called inwardly opening type comnprising a nozzle body, a blind bore formed in the body, a seating defined at the blind end of the bore, a valve member slidable in the bore, one end of the valve member being shaped to co-operate with said seating, resilient means for biasing the valve member into contact with the seating, a fuel inlet in the body, said valve member defining an area against which fuel under pressure supplied to said inlet can act to lift the valve member away from the seating thereby to allow fuel flow through an outlet, first and second flow paths through which fuel flows from said inlet to act upon said area of the valve member and to said outlet, said first flow path including a restrictor the degree of restriction offered by the restrictor increasing as the valve member moves away from the seating, said second flow path being closed when the valve member is in contact with the seating but opening when the valve member has moved a predetermined distance away from the seating, said second flow path when opened, offering decreasing restriction to the flow of fuel as the valve member continues to move away from the seating.

4,552,311

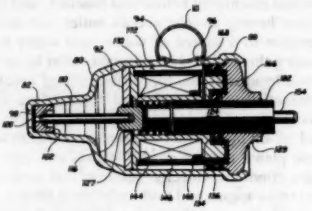
LOW COST UNITIZED FUEL INJECTION SYSTEM

Gary L. Casey, Troy, Mich., assignor to Allied Corporation

Filed Sep. 23, 1983, Ser. No. 535,009

Int. Cl.[4] B05B *1/30*

U.S. Cl. 239—585 **31 Claims**



1. A unitized fuel injection system comprising:

a unitized fuel rail having a tubular rail member having an input at one end for receiving fuel under pressure and a plurality of output apertures disposed at predetermined positions along its length, a fuel pressure regulator permanently attached to the opposite end of said rail member for controlling the pressure of the fuel in the rail member, and a plurality of cylindrical valve housings, one of said valve housings permanently attached to said rail member coincident with each of said outlet apertures; each of said valve housings having a forward necked down section, an annular end face partially enclosing the end of said necked down section, a body section attached directly to said rail member, and an intermediate section interconnecting said necked down section with said body section, each of said body sections having a fuel inlet aperture mating with said outlet aperture interconnecting the interior of said valve housing with the interior of said rail member;

a metering plate disposed in each of said valve housings abutting said annular end face, said metering plate haaving an axially disposed metering orifice;

a stationary valve member pressed into the necked down section of each valve housing and captivating said metering plate against said annular end face, each of said stationary valve members having an axial aperture intercepting said metering orifice at its forward end and terminating in a conical valve seat;

a light weight movable valve assembly concentrically disposed in each of said valve housings, each of said movable valve assemblies comprising a magnetically susceptible armature and a coaxial valve stem having one end attached to said armature and an opposite end having a spherical surface engaging said conical valve seat;

a magnetically susceptible end cap enclosing the rear end of each valve housing, each of said end caps having a central aperture and at least one terminal aperture;

a magnetically susceptible cylindrical stator concentrically disposed in each of said valve housings, one end of said stator received in the central aperture of said end cap and structurally supported therefrom, the other end of said stator separated from said armature by a predetermined distance; and

a resilient member disposed in each valve housing between said stator and said armature urging the spherical surface of the valve stem into engagement with said conical valve seat with a predetermined force;

a cylindrical coil assembly disposed in each of said valve housings circumscribing said armature and said stator, each of said coil assemblies including a bobbin having a pair of electrically conductive terminals protruding external to said valve housing through said at least one terminal aperture of said end cap, a radial fluid vent connecting the entrapped space between said bobbin, said armature and said stator with the space between said bobbin and said

housing, and a solenoid coil wound on said bobbin having one of its ends connected to one of said pair of electrical terminals and the other end connected to the other of said pair of electrical terminals.

4,552,312

FUEL INJECTION VALVE

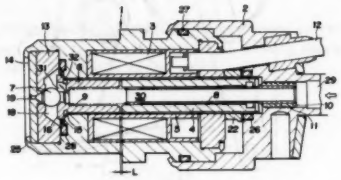
Yasuo Ohno; Tadashi Seino; Yukio Ueno; Kenji Kariyama; Shinji Utsugi, and Shigeo Okada, all of Iwate, Japan, assignors to Tohoku Mikuni Kogyo Kabushiki Kaisha, Japan

Filed Jan. 9, 1984, Ser. No. 569,167

Claims priority, application Japan, Jan. 14, 1983, 58-3325; Feb. 28, 1983, 58-27012[U]

Int. Cl.⁴ B05B *1/30*

U.S. Cl. 239—585 **9 Claims**



1. An electromagnetic fuel injection valve having a body of magnetic material, a core and a hollow plunger disposed in the body and formed with a fuel passage communicating with a valve chamber, a ball valve secured to the end of the plunger and separably associated with a seat member, and a solenoid coil for opening the ball valve upon energization thereof to eject fuel comprising:

a guide pipe surrounded on the outer periphery of said core and extended at the end thereof to said valve chamber, and

a stopper formed between the extended end of said guide pipe and the protruded end of said plunger at the valve chamber side engaged within said guide pipe for restricting the stroke of said plunger.

4,552,313

METHOD AND APPARATUS FOR SWITCHING YARN IN TURRET-TYPE WINDER

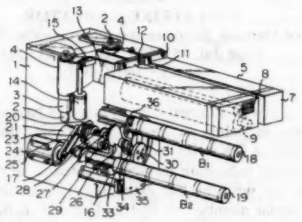
Yasusuke Sasaki, Osaka, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Jun. 7, 1984, Ser. No. 618,164

Claims priority, application Japan, Jun. 7, 1983, 58-100145

Int. Cl.⁴ B65H *54/06, 54/42, 67/04*

U.S. Cl. 242—18 A **15 Claims**



1. A method for switching yarn in a turret type automatic winder in which a pair of bobbin holders are arranged on a rotatable turret with each bobbin holder being capable of alternately occupying a winding position and a doffing position upon every half turn of said turret comprising

continuously taking up a yarn on a bobbin held on one bobbin holder in the winding position to form a package while an empty bobbin is held on the other bobbin holder in the doffing position,

switching the yarn from the package to the empty bobbin when the package grows to a predetermined size by rotating said turret a half turn, and

accelerating each of said bobbins prior to switching of the yarn from the package to the empty bobbin so that a proper yarn tension is maintained including positively increasing the driving torque for accelerating said bobbin holder carrying the package in a manner corresponding to the growth in size of the package.

4,552,314

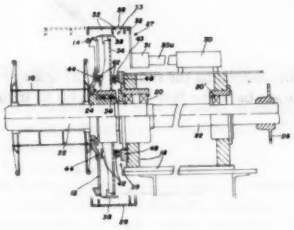
METHOD AND APPARATUS FOR FIXING AN END OF A COILED WIRE ON A TAKE UP SPOOL

Masahisa Noguchi, Chiba, and Kazuji Kaneda, Ichihara, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,872

Int. Cl.⁴ B65H *75/28*

U.S. Cl. 242—25 R **17 Claims**



5. An apparatus for securing a terminating end of a coiled wire on a take up spool on a wire take up apparatus which comprises a catching plate integrally rotating with said take up spool and having a catching pawl to catch an initiating end of the wire to be coiled on said take up spool, said apparatus characterized in that said catching pawl has a catching portion to catch said terminating end of said coiled wire and further comprising wire introduction means including a wire introduction cover disposed so as to cover said catching plate and said take up spool and having means to introduce said terminating end of said wire toward said catching pawl so that said initiating and terminating ends of said wire intersect, and a power source to relatively move said wire introduction cover and said spool between an advanced position in which said wire introduction cover surrounds said take up spool and a retracted position in which said take up spool is relieved out of said wire introduction cover; and means to fix intersecting portions of said initiating and terminating ends of said wire to each other.

4,552,315

ROLLED WEB DISPENSER

Maurice Granger, 17 rue Marcel Pagnol, 42270 Saint-Priest-en-Jarez, France

Filed Sep. 19, 1983, Ser. No. 533,661

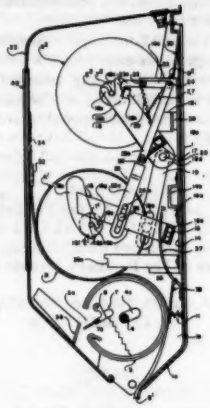
Claims priority, application France, Jan. 13, 1983, 83 00737; Jun. 21, 1983, 83 10533

Int. Cl.⁴ B65H *19/04*

U.S. Cl. 242—55.3 **16 Claims**

1. A dispensing device for rolled webs comprising a roll being used supported by a first support and a spare roll supported by a second support, a rigid structure having the two supports pivotally mounted thereon, a small rod linked hingedly to the two supports, wherein the roll being used is ejected and the spare roll is transferred automatically to the first support; means linked hingedly to the first support releas-

ing the second support from the connecting means when the roll being used is almost entirely paid off; an interlocking



means for controlling the support of the spare roll, and a spring which urges back the first support with its fresh roll.

4,552,316

METHOD AND APPARATUS FOR WINDING WEBS OF CELLULOSE

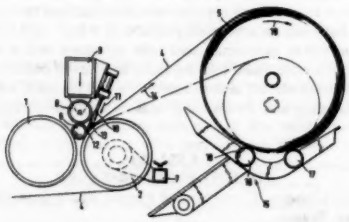
Hartmut Dropczynski, Dormagen, and Peter Trilling, Wuppertal, both of Fed. Rep. of Germany, assignors to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,086

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244966

Int. Cl.⁴ B65H *19/20, 17/08*

U.S. Cl. 242—56 R **4 Claims**



3. In an apparatus for winding a web of cellulose on a core tube while under tension, including means for separating the web after a predetermined amount of web has been wound on a first core tube, the improvement comprising means for partly looping the web around a next core tube prior to separation of the web and while the web is still under tension, means for forcing the web down to almost completely wrap around said next core tube and for wetting the web transversely to the direction of travel to effect separation while ensuring that said next core tube is completely looped.

4,552,317

APPARATUS FOR COILING A SYNTHETIC RESIN FOIL WEB

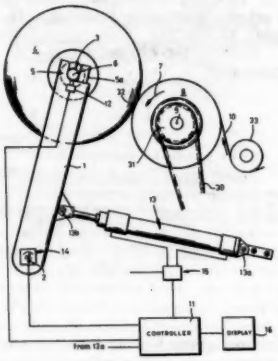
Hartmut Halter, Ruppichteroth, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,609

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1983, 3335713

Int. Cl.⁴ B65H *17/08, 23/00*

U.S. Cl. 242—65 **5 Claims**



1. An apparatus for coiling a coil web which comprises:

a pair of mutually parallel spaced apart arms pivotal about a horizontal axis at lower ends of said arms and having upper ends formed with lodgements adapted to support a coil formed by a foil web;

a contact drum adapted to apply said foil web to said coil;

drive means connected with said contact drum for rotating same and thereby rotating said coil, said coil bearing by its weight upon said contact drum;

a control member connected to at least one of said arms for regulating the pressure with which said coil bears on said drum;

at least one force sensor on said arms responsive to a force component of the weight of said coil parallel to said arms;

an angle sensor responsive to the inclination of said arms; and

a controller receiving inputs from said sensors and connected to said member for controlling the pressure with which said coil bears against said drum.

4,552,318

FISH STRIKE INDICATOR

B. Elwood Durham, Southern Ave., Kannapolis, N.C. 28081

Filed Jul. 26, 1983, Ser. No. 517,266

Int. Cl.⁴ A01K *89/01*

U.S. Cl. 242—84.1 K **10 Claims**

1. For use with a closed face fishing reel having a front face portion and including an opening for a fishing line in the front face portion, a fish strike indicator comprising:

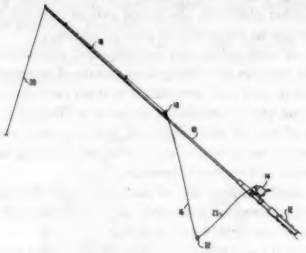
(a) an annular indicating member adapted to be received on a fishing line with the line extending through the opening in said annular member, so that said annular member and line may move freely with respect to each other;

(b) a tubular member for removably supporting said annular indicating member, said tubular member being formed for attachment to said front face portion surrounding the opening in said front face portion;

(c) said annular indicating member being dimensioned to frictionally engage said tubular member when not in use;

(d) said annular indicating member being removable from said

tubular member for use and being supported during such use in slack formed in the line;



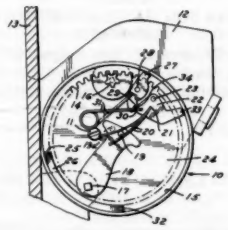
(e) said annular indicating member being caused to move up and down when the line is moved by a striking fish to provide a visible indication of the strike.

4,552,319

COMBINATION VSI AND ALR RETRACTOR

James A. Gavagan, Centerline, and Jerry Motyka, Detroit, both of Mich., assignors to Irvin Industries Inc., Rochester Hills, Mich.

Filed Dec. 14, 1983, Ser. No. 561,323
Int. Cl.⁴ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **5 Claims**



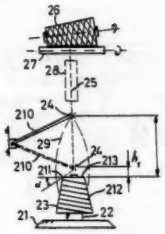
1. Combination vehicle sensitive inertia, and automatic locking retractor, comprising a vehicle sensitive inertia retractor having spring wind-up webbing reel means with a ratchet and a latch bar normally actuated by inertia means for locking the reel means against webbing extraction, and supplemental means biasing the latch bar toward extraction locking ratchet engagement in response to full webbing extraction beyond occupant restraining position to cause said retractor upon webbing spring wind-up to a passenger restraining position to automatically lock in an automatic locking retractor mode against extraction without inertia actuation, said supplemental means including gearing responsive to reel rotation for sensing full webbing extraction and retraction, latch bar biasing control detent lever means movable between an automatic locking retractor position and a vehicle sensitive inertia position modes by said gearing at extremities of said webbing extraction and retraction, said detent lever means including a pair of separate noncoaxially pivotally mounted interengaging levers, and detent means on said levers to maintain said detent lever means in said automatic locking retractor position or said vehicle sensitive inertia position when the webbing is wound on or off the reel an amount between the extremities of webbing extraction and retraction, and means responsive to said lever means for restoring normal vehicle sensitive inertia operation upon full belt retraction beyond occupant restraining position.

4,552,320

METHOD AND APPARATUS FOR FORMING SNARL-FREE THREAD RESERVES

Olivier Wüst, Seuzach, Switzerland, assignor to Maschinenfabrik Schrärer AG, Erlenbach, Switzerland

Filed Apr. 4, 1983, Ser. No. 482,037
Claims priority, application Switzerland, Apr. 20, 1982, 2373/82; Sep. 29, 1982, 5772/82
Int. Cl.⁴ B65H *49/00, 69/04*
U.S. Cl. 242—128 **26 Claims**



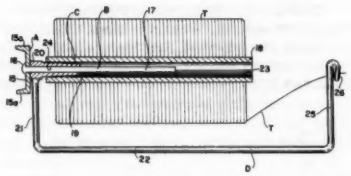
15. A winding machine or the like comprising:
a donning mandrel;
a delivery bobbin mounted on said donning mandrel;
a winding bobbin for winding-up one or a number of threads running towards the same;
drive means for driving said winding bobbin;
a thread guide arranged substantially coaxially with respect to and at a distance from said donning mandrel;
means for reducing the angle of a thread extending between said delivery bobbin and said thread guide;
a tube provided for the delivery bobbin;
an extension having an end and forming an axial prolongation attached to said tube of said delivery bobbin; and
said thread being deflectable at said extension so as to form an angle of $<60°$ with an end face of said delivery bobbin.

4,552,321

STRAND GUIDE

Marc A. Raeckelboom, Rte. 3, Box 501, Simpsonville, S.C. 29681

Filed Feb. 6, 1984, Ser. No. 577,490
Int. Cl.⁴ B65H *49/02*; D03J *5/08*
U.S. Cl. 242—130 **5 Claims**



1. A creel for supporting a plurality of yarn packages having a tubular core member comprising:
an upright frame having a plurality of spaced outwardly projecting elongated members for loosely receiving said tubular core member of said yarn packages;
elongated package positioning members each having an outer surface tapering inwardly toward an insertable end receivable within said tubular core member for snugly receiving said package thereon;
a longitudinal bore within each said elongated package positioning member loosely receivable upon said spaced outwardly projecting elongated members; and
an offset support carried by each of said package positioning

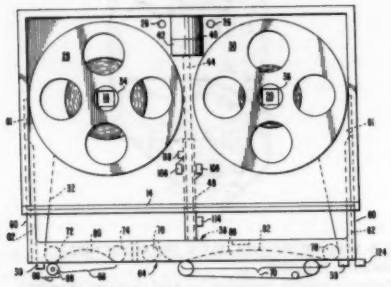
members remote from said insertable ends supporting a yarn guide for feeding yarn from said packages.

4,552,322

CASSETTE APPARATUS FOR STORING LIGHT SENSITIVE, HEAT DEVELOPABLE FILM

John B. S. Waugh, Mountain Lakes, N.J., assignor to LASERstore, Ltd., Hamilton, Bermuda

Filed Aug. 6, 1984, Ser. No. 638,227
Int. Cl.[4] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **19 Claims**



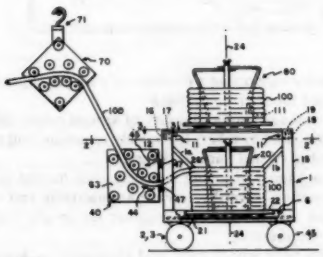
15. A cassette system comprising:
a housing;
a supply spool located in said housing;
a take-up spool located in said housing;
film means for storing information connected to said supply spool and to said take up spool;
movable door means connected to said housing for preventing light from entering said housing when said door means is closed;
film carrier means for supporting a portion of said film means;
motor means for propelling said film carrier means and a portion of said film means outside of said housing when said door means is open;
spool drive means; and,
spool engaging means responsive to the movement of said door means for causing said spool drive means to drivingly engage said supply and take up spools.

4,552,323

CABLE DISPENSING APPARATUS

John F. Otis, 11 Power Rd., Westford, Mass. 01824

Filed Oct. 11, 1984, Ser. No. 659,640
Int. Cl.[4] B65H *75/40*, *49/00*
U.S. Cl. 242—865 R **6 Claims**



1. Apparatus for dispensing cable from a coil of the cable contained in the apparatus comprising,

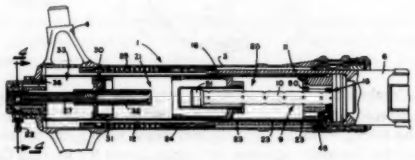
(a) a freestanding cart,
(b) at least two interchangeable cable coil holding reels, each including a spool for holding a coil of cable, mounted on a turntable platform, the spool axis of rotation being perpendicular to the plane of said platform,
(c) each of said cable coil holding reel platforms has four outside corners providing four points of support therefor,
(d) means in said cart providing at least two shelves spaced apart one above another a distance sufficient to clear the height of one of said cable coil holding reels, each of said shelves for holding one said cable coil holding reels at said four points of support therefor,
(e) each shelf holding one of said cable coil holding reels in a position from which cable can be dispensed from the outside of said coil held thereby,
(f) one of said cart shelves is a bottom shelf that supports one of said cable coil reels at the bottom of said cart,
(g) said cart shelves above said bottom shelf thereof being sufficiently open at the center thereof that said cable coil holding reels can be lifted, each from the shelf it is held on, from said cart through said center openings in said shelves above.

4,552,324

LANDING GEAR MECHANISM FOR USE ON ROUGH RUNWAYS

Louis C. Hrusch, Chesterland, Ohio, assignor to Pneumo Corporation, Boston, Mass.

Filed May 31, 1983, Ser. No. 499,217
Int. Cl.[4] B64C *25/60*
U.S. Cl. 244—104 FP **66 Claims**

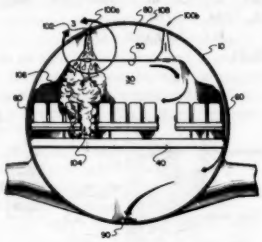


1. A landing gear mechanism comprising a main cylinder, a main strut piston axially movable within said main cylinder, means for controlling the rate of instroke of said main strut piston within said main cylinder including restrictor means defining with the outboard end of said main strut piston a lower piston chamber therebetween, said restrictor means having a restricted flow passage therethrough for controlling the rate of flow of hydraulic fluid between said lower piston chamber and the opposite side of said restrictor means, overload relief valve means for relieving excess pressure from said lower piston chamber in the event that an overpressure condition should develop during instroke movements of said landing gear mechanism while taxiing, and means for blocking communication between said overload relief valve means and said lower piston chamber during landing, said means for blocking communication between said overload relief valve means and said lower piston chamber comprising a rotary valve vane movable between a first position covering said overload relief valve means during landing and a second position uncovering said overload relief valve means after landing has taken place.

4,552,325
EMERGENCY SMOKE DISPOSAL SYSTEM FOR PRESSURIZED AIRCRAFT

Wilhelm A. Bruensicke, Santa Monica, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Sep. 24, 1982, Ser. No. 422,934
Int. Cl.⁴ B64D *13/00, 25/00*
U.S. Cl. 244—118.5 **9 Claims**

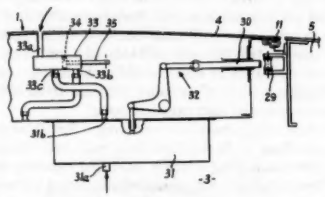


1. A smoke evacuation system for a vehicle comprising:
a skin opening defined in an outer skin separating an interior compartment within said vehicle from an exterior environment surrounding said vehicle, said interior being capable of being maintained at a positive differential pressure with respect to said exterior;
a cover plate for covering said opening and thereby preventing any flow of air therethrough;
means for ejecting said cover plate from said opening; and
a smoke disposal chute having a first end in fluid communication with a region within said compartment at which smoke may be expected to collect and a second end in fluid communication with said opening;
whereby when said cover plate is ejected from said opening, any smoke-laden air in said region will be forced through said opening and evacuated into said external environment as a result of said positive pressure differential.

4,552,326
SAFETY DEVICE FOR OPENING AN OUTWARDLY OPENING AIRCRAFT DOOR IN THE EVENT OF EXCESS PRESSURE INSIDE THIS AIRCRAFT AND DOOR EQUIPPED THEREWITH

Jean Bokalot, Toulouse, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Jun. 26, 1984, Ser. No. 624,816
Claims priority, application France, Jul. 8, 1983, 83 11451
Int. Cl.⁴ B64C *1/14*
U.S. Cl. 244—129.5 **7 Claims**

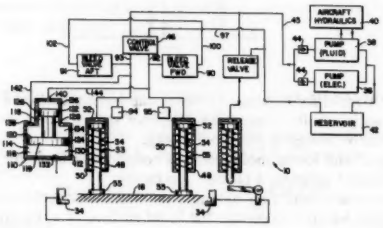


1. Safety device for an aircraft door opening outwardly by a preliminary movement enabling stops borne by said door to be disengaged from stops borne by the frame thereof, after which complete opening of the door is obtained by a simple thrust or pull, said safety device comprising at least one mobile lock and one stop, one mounted on the door and the other on the frame thereof and adapted to cooperate with one another to interrupt the prior movement of disengagement of the stops on the door and the stops on the frame, said mobile lock being controlled by manometric means receiving the pressures inside and outside of the aircraft, so that said mobile lock takes a retracted position, for which it cannot cooperate with said stop when said inside pressure is substantially equal to the outside pressure, and a projecting position for which it can cooperate with said stop when said inside pressure is greater than the outside pressure, said safety device being applied to said door, which has to be able to open quickly if necessary, by actuation of a special handle, and there being means adapted to inhibit the action of said mobile lock and controlled by said special handle.

4,552,327
HYDRAULIC EJECTOR

William R. Carter, Jamestown, N. Dak., assignor to Western Gear Corporation, Jamestown, N. Dak.

Filed Sep. 19, 1983, Ser. No. 533,675
Int. Cl.⁴ B64D *1/12*
U.S. Cl. 244—137 R **10 Claims**



1. A hydraulic system for controlling the ejection of a store from an aircraft comprising:
a control means having an inlet means adapted to be connected to a source of pressurized hydraulic fluid and an outlet means, said control means having operable means for selectively hydraulically connecting and disconnecting said inlet means to said outlet means;
a pair of ejector units having movable members which define variable volume hydraulic chambers within said ejector units, respectively, said movable members having an exterior portion adapted to engage a store, said chambers each being of a selected minimum volume when said movable members are in engagement with a store, said chambers increasing in volume to move said movable members to eject a store,
an accumulator having a sealed gas chamber with a gas therein at a pressure less than the pressure of such a source, said accumulator having a movable member defining a pair of variable volume accumulator chambers which simultaneously increase in volume as the volume of said gas chamber decreases as the accumulator is charged, said gas chamber and said accumulator chambers changing in the reverse manner when said accumulator is discharged,
conduit means simultaneously connecting said outlet means to said variable volume chambers of said ejector units and to said accumulator chambers, respectively, whereby when said operable means connects said inlet means to said outlet means, the pressurized hydraulic fluid from such a source simultaneously biases said movable members of said ejector units into engagement with such a store and charges said accumulator by moving said movable member thereof to compress the gas in said gas chamber and whereby, when said inlet means is thereafter disconnected from said outlet means, said store can be ejected by said movable members of said ejector units under the effect of the gas within said gas chamber upon said movable member of said accumulator.

4,552,328

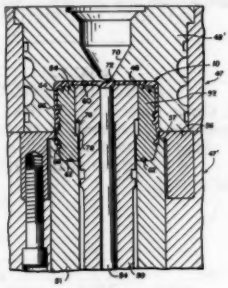
MOLD FOR MAKING TAMPER-PROOF CLOSURE

Herbert V. Dutt, and Paul A. Santostasi, both of Sarasota, Fla., assignors to Sun Coast Plastics, Inc., Sarasota, Fla.

Division of Ser. No. 567,077, Jan. 5, 1984, Pat. No. 4,526,282, and a continuation of Ser. No. 491,673, May 5, 1983, abandoned. This application Mar. 1, 1985, Ser. No. 707,364

Int. Cl.[4] B29C *1/00, 7/00;* B29D *1/00;* B29F *1/14*

U.S. Cl. 249—67 5 Claims



1. A mold for forming a closure cap having a closure shell and an integrally formed tamper-proof security ring secured thereto by frangible ribs, comprising:

upper and lower mold portions cooperating to define, in a closed position, a closure cap cavity;

a movable core ring mounted on said lower mold portion and adapted to engage the inner surface of a closure cap formed in said cavity;

an annular stripper ring including inwardly extending projection having a generally axially extending interior mold face adapted to cooperate with said moveable core ring to define a part of said closure cap cavity and adapted to engage the outer surface of a closure cap formed in said cavity, said stripper ring including a first transverse surface which intersects a generally axially extending first portion of said interior mold face to define a first stripper ring shoulder adapted to engage a corresponding shoulder defined on the skirt portion of a closure cap formed in said closure cap cavity.

4,552,329

CARBON FIBER-REINFORCED GYPSUM MODELS AND FORMING MOLDS

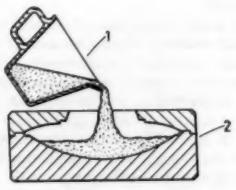
Yoshiaki Hattori, Yokkaichi, and Makoto Ishihara, Ama, both of Japan, assignors to Noritake Co., Limited, Nagoya, Japan

Filed Apr. 19, 1984, Ser. No. 601,851

Claims priority, application Japan, Apr. 19, 1983, 58-068954; Apr. 23, 1983, 58-071963

Int. Cl.[4] B28B *1/26;* B29C *5/00*

U.S. Cl. 249—134 13 Claims



1. A carbon fiber-reinforced gypsum model comprising a gypsum structure of a matrix, said structure of a matrix comprising gypsum and from 5 to 200 mm long carbon fibers uniformly dispersed therein in the form of single fibers in an amount rainging from 0.008 to 2.0 wt % based on said gypsum.

4,552,330

PRESSURE MEDIUM ACTUATED VALVE

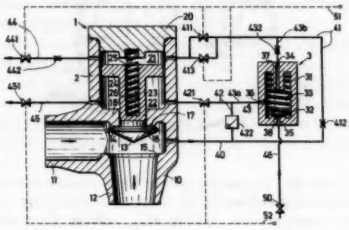
Karl H. Grotloh, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 17, 1984, Ser. No. 611,091

Claims priority, application Switzerland, May 19, 1983, 2731/83; Jan. 10, 1984, 410/84

Int. Cl.[4] F16K *31/124*

U.S. Cl. 251—30.01 14 Claims



1. A pressure medium actuated valve comprising

a body having a pressure zone, an inlet port for connection to a pressure medium source to deliver a pressure medium to said zone, an outlet port, and a cylinder sealingly spaced from said zone;

a closure member for selectively opening and closing said outlet port;

a servopiston slidably disposed in said cylinder to sub-divide said cylinder into a first cylinder space which increases in size during transition of said servopiston from a working position to a safety position and a second cylinder space which decreases in size during said transition;

a rod connecting said servopiston to said closure member to permit movement of said closure member with said servopiston;

at least one spring in said cylinder for biasing said servopiston towards said safety position;

a first relief conduit extending from said first cylinder space to at least one pressure medium sink;

a first control valve in said first relief conduit;

a second relief conduit extending from said second cylinder space to at least one pressure medium sink;

a second control valve in said second relief conduit;

a first connecting conduit communicating said pressure zone in said body with said first cylinder space;

at least one control valve in said first connecting conduit;

a second connecting conduit communicating said pressure zone in said body with said second cylinder space;

at least one control valve in said second connecting conduit;

a non-return valve in said second connecting conduit for preventing a flow of pressure medium from said second cylinder space to said pressure zone;

a third connecting conduit connecting a first flow path with a second flow path, said first flow path extending through said first connecting conduit, said first cylinder space and said first relief conduit to said first control valve and said second flow path extending through said second connecting conduit from said non-return valve, said second cylinder space and said second relief conduit to said second control valve;

a double-action non-return valve connected in said third connecting circuit; and

an external medium conduit connected to said double-action valve to deliver a pressure medium thereto, said double-action valve having a first position communicating said first flow path with said second flow path and a second

position communicating said external medium conduit with said second flow path.

14. A pressure medium actuated valve comprising

a body having a pressure zone, an inlet port for connection to a pressure medium source to deliver a pressure medium to said zone, an outlet port, and a cylinder sealingly spaced from said zone;

a closure member for selectively opening and closing said outlet port;

a servopiston slidably disposed in said cylinder to sub-divide said cylinder into a first cylinder space which increases in size during transition of said servopiston from a working position to a safety position and a second cylinder space which decreases in size during said transition;

a rod connecting said servopiston to said closure member to permit movement of said closure member with said servopiston;

at least one spring in said cylinder for biasing said servopiston towards said safety position;

a first relief conduit extending from said first cylinder space to at least one pressure medium sink;

a first control valve in said first relief conduit;

a second relief conduit extending from said second cylinder space to at least one pressure medium sink;

a first connecting conduit communicating said pressure zone in said body with said first cylinder space;

at least one control valve in said first connecting conduit;

a second connecting conduit communicating said pressure zone in said body with said second cylinder space;

at least one control valve in said second connecting conduit;

a non-return valve in said second connecting conduit for preventing a flow of pressure medium from said second cylinder space to said pressure zone;

a third connecting conduit connecting a first flow path with a second flow path, said first flow path extending through said first connecting conduit, said first cylinder space and said first relief conduit to said first control valve and said second flow path extending through said second connecting conduit from said non-return valve, said second cylinder space and said second relief conduit to said second control valve, said third connecting conduit being connected to said first flow path between said first cylinder space and said control valve in said first connecting conduit and to said second flow path between said second cylinder space and said control valve in said second connecting conduit;

a removable wall portion mounted on said cylinder to define a part of said third connecting conduit; and

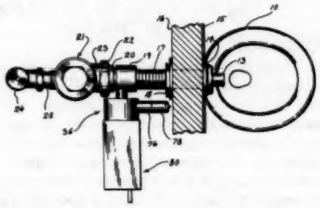
a constriction within said wall portion for calibrating a flow through said third connecting conduit.

4,552,331

REMOTELY CONTROLLABLE RESET MECHANISM FOR A VACUUM-ACTUATED SYSTEM

William A. Smart, Jr., Germantown, Wis., assignor to Bradley Corporation, Menomonee Falls, Wis.

Filed Aug. 3, 1984, Ser. No. 637,296
Int. Cl.[4] F16K *31/02, 35/00, 37/00*
U.S. Cl. 251—95 **6 Claims**



1. A reset mechanism for a fluid-valve assembly with a lockout device of the type having a reciprocally movable reset stem that moves in a vacuum-actuated stroke when a partial vacuum is drawn in a vacuum chamber of the lockout device to lock an actuator for the fluid-valve assembly, the reset mechanism comprising:

the reset stem having a passageway extending from the vacuum chamber to a port outside a lockout device housing;

valve means in the passageway biased to a position closing the passageway; and

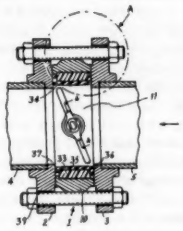
a solenoid with an operating stem coupled to the valve means, and coupled to the reset stem with a lost motion connection, the solenoid being energized to move its operating stem and the reset stem on a reset stroke opposite in direction from the vacuum-actuated stroke, wherein the valve means is opened in a first portion of the reset stroke to relieve the vacuum in the vacuum chamber during a lost motion movement through the lost motion connection, and wherein the reset stem is moved in a second portion of the reset stroke following the lost motion movement to withdraw the reset stem from a vacuum-actuated position to unlock the actuator of the fluid-valve assembly.

4,552,332

BUTTERFLY VALVE, ESPECIALLY FOR DEAD-END SERVICE

Henry R. Sonderegger, Barrington, and Charles Chatterley, Coventry, both of R.I., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 27, 1984, Ser. No. 624,865
Int. Cl.[4] F16K *51/00*
U.S. Cl. 251—148 **7 Claims**



1. A butterfly valve, comprising

a valve body bounding a passage centered on an axis and having two axially spaced end portions and an intermediate region therebetween, said valve body having at least one detaining projection extending radially inwardly into said passage at one of said end portions;

a disc-shaped valve member mounted in said valve body for turning about a turning axis extending transversely of said passage between a closing position in which said valve member extends across said passage at said intermediate region, and a fully open position in which said valve member extends substantially along said axis of said passage, through a plurality of partially open positions; and

means for sealing said valve member in said passage, including an annular sealing element extending around said axis of said passage, said sealing element including a support ring having two oppositely facing axial faces one of which faces toward said detaining projection and an outer circumferential surface of an outline substantially corresponding to the cross-sectional shape of said passage at said intermediate region, and an elastically yieldable sealing ring at least partially embedding said support ring but exposing at least a zone of said one axial face of said support ring which is substantially coextensive with said

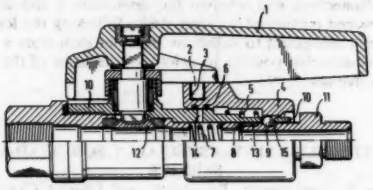
detaining projection of said valve body for said zone to abut said projection, said sealing means further including at least one rigid holding member connected to said valve body and having an axial contact surface which faces said sealing element and sealingly contacts said sealing ring at a circumferentially complete region thereof which is juxtaposed with the other of said axial faces of said support ring.

4,552,333

BAYONET CATCH FOR A LINE OF PRESSURIZED MEDIUM

Pertti K. Niemi, Vaasa, Finland, assignor to Oy Pajakanta AB, Finland

Filed Jan. 27, 1984, Ser. No. 574,413
Int. Cl.⁴ F16L *29/00*
U.S. Cl. 251—149.9 **7 Claims**



1. The combination of a manually operated valve and a bayonet type conduit to plug connection, said valve having a body with a fluid passes therethrough; a rotatable valve element mounted within said body for closing said passage and a lever external of said body connected to said valve element for rotation thereof between opened and closed positions, said valve body having a plug receiving tubular portion at one end of said passage and a sleeve surrounding said portion and slidable lengthwise of said portion; a bleed passage in said portion between said rotatable valve and said one end and communicating with said passage; said sleeve having closure means seating over said bleed passage when said sleeve is in plug locking position, a discharge passage in said sleeve positioned to communicate with said bleed passage when said sleeve is retracted toward said rotatable valve; means secured to said rotatable valve element for rotation therewith, said means engaging said sleeve for shifting said sleeve to connect said bleed passage and discharge passage after said rotatable valve element has reached a closed position and before moving the sleeve of plug release position whereby fluid pressure in the passage and coupling is released before the uncoupling the plug.

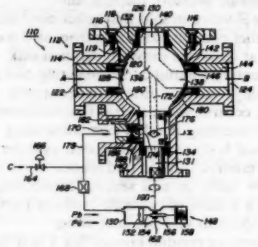
4,552,334

FLOW CHANGE-OVER VALVE FOR THE BLOWING OF FLUIDS INTO MOLTEN METAL VESSEL

Yoshiro Tomiyama; Masaaki Yamanashi; Hitoshi Morishita; Fumio Sudo; Shuzo Fujii, and Hideo Miwa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe and Denka Consultant & Engineering Company Limited, Tokyo, both of, Japan

Filed Apr. 30, 1984, Ser. No. 605,137
Claims priority, application Japan, Mar. 28, 1984, 59-58162
Int. Cl.⁴ F16K *31/12, 19/00*
U.S. Cl. 251—240 **2 Claims**

1. A flow change-over valve for the blowing of fluids into a molten metal vessel comprising a housing provided with an inner body supporting space, an outlet port and at least three inlet ports for different fluids, said at least three inlet ports comprise first, second and third inlet ports, a spherical valve body hermetically fitted into said supporting space, said valve body having upper and lower extension portions disposed axially with respect to said outlet port, said valve body rotatably supported in the housing to perform a changing-over of said inlet passages and provided therein with a main passage communicating with said outlet port and selectively communicating between a respective one of said first, second or third inlet ports, said main passage extending through the upper extension portion of the valve body for communication with the outlet port, said main passage further defining an inlet opening in said valve body for communication with a respective one of said first, second or third inlet ports, and an outlet opening which defines the outlet port, said third inlet port being a purging fluid inlet arranged to communicate with said inlet opening so as to provide a purge fluid flow through said main passage to the outlet port during each rotation of the valve body when changing-over from said first inlet port to said second inlet port and vice versa, hermetic sealing means providing a sealed fluid passage, respectively, between each of said first and second inlet ports and the inlet opening of said valve body, and means for pushing said hermetic sealing means against the valve body so as to prevent leakage, said housing



being provided with a shroud-like gap surrounding the valve body, said gap being in communication with the inner periphery of the housing, said gap being in communication with said third inlet port for purging fluid and the inlet opening of said main passage to provide a purge fluid flow when the valve body changes-over from said first inlet port to said second inlet port so as to provide a purge fluid flow through said main passage, and vice versa, to prevent any mixing of different fluids flowing through said first and second inlet ports, the lower extension portion of the valve body being provided with a purge fluid passage for communicating with a second purge fluid inlet, said purge fluid passage extending within said purge fluid passage extending within said lower extension portion to said spherical valve body, said passage communication with said main passage interiorly of said spherical valve body so as to direct purging fluid toward said outlet port, said housing including a purge fluid connection wherein both said purge fluid inlet and said second purge fluid inlet communicate with said purge fluid connection.

4,552,335

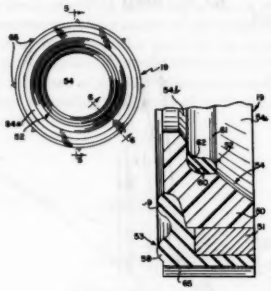
BALL VALVE

William H. Alexander, and Roy R. Dare, both of Houston, Tex., assignors to Vapor Corporation, Chicago, Ill.

Filed Nov. 3, 1983, Ser. No. 548,320
Int. Cl.⁴ F16K *5/06*
U.S. Cl. 251—315 **11 Claims**

1. In a high pressure ball valve including a valve body having coaxially aligned inlet and outlet ports, a control chamber between said ports and a bonnet aligned with the control chamber, a ball in the closure chamber having a cylindrical passageway therethrough and rotatable between an open position where the passageway is coaxially aligned with said inlet and outlet ports and a closed position where the passageway is at right angles to the axis of the inlet and outlet ports, annular seats within said body and aligned with said inlet and outlet ports guidably supporting said ball, and a stem in the bonnet interconnected to said ball such that the ball floats between

said seats, the improvement being in said seats each of which comprise a molded plastic core having a heat deflection point of at least 400 degrees F. and elastomeric sealing means bonded to said core to seal between the ball and body, said core having a spherical ball engaging face of the same radius as the ball with a recess intermediate the opposite edges of the face, said ball engaging face defining a spherical volume, said elastomeric sealing means including a seal in said recess to seal between the seat and ball, and said seal including a convex portion disposed within the spherical volume defined by said ball engaging face and a concave portion disposed outside the spherical volume defined by said face, said concave portion being disposed on the side of said convex portion toward the center of said seat.

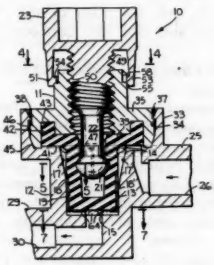


4,552,336

LIQUID FLOW REGULATOR

Giovanni Pastrone, Los Gatos, Calif., assignor to OXIMETRIX, Inc., Mountain View, Calif.

Filed Jun. 29, 1984, Ser. No. 626,266
Int. Cl.⁴ F16K *7/02, 47/04*
U.S. Cl. 251—331 **5 Claims**



1. A liquid flow regulator comprising:

a housing having an axial bore, an inlet adjacent one end of the bore, an outlet at the opposite end of the bore, and at least one axial groove opening endwise into the inlet and laterally of the bore into the bore, said groove having at least one dimension that tapers from the inlet to the bore so that the groove cross-sectional area gradually decreases to nothing where the groove merges into the bore;

an elastomeric sock fitted within the bore;

means movable axially of the bore within the sock for expanding the sock radially outward into sealing engagement with the housing adjacent the bore, whereby flow through the groove and the bore is regulated by the axial position of the sock expanding means and the minimum cross-sectional area of the tapered, axial groove at the axial location where the sock seals the bore, said sock expanding means including a bulb, a stem attached to the bulb including means threadedly fitting the stem through the housing so as to permit the bulb to be moved axially of the bore upon rotation thereof, and a knob for rotating the stem; and

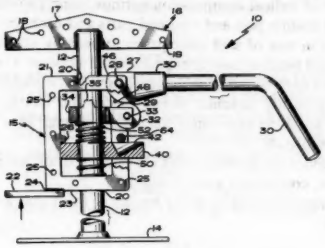
means for disabling the sock expanding means to limit withdrawal of the bulb from the bore.

4,552,337

CARPENTER JACK

Allen R. Wille, 2207 Roosevelt Dr., Apt. 5, Anchorage, Ak. 99503

Filed Apr. 2, 1984, Ser. No. 595,832
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 254—106 **11 Claims**



1. A friction-type carpenter jack for jacking a first workpiece toward a second workpiece comprising:

a shaft;

a base plate engageable with said shaft and capable of providing support for the carpenter jack;

a carrier being rotatably mounted along said shaft and having an upper and lower section; said lower section having a first workpiece retaining means extending therefrom, said carrier also having a plurality of holes along its periphery for nail placement to secure the first workpiece during jacking;

an upwardly jacking means mounted on said carrier for movement of said carrier away from said base plate;

said upwardly jacking means including an upper handle displaceable between a first and second position;

a downwardly jacking means mounted on said carrier for movement of said carrier toward said base plate;

said downwardly jacking means including a lower handle displaceable between a first and second position;

a head plate engageable with said shaft and being rotatably mounted about said shaft on the opposite end of said shaft from said base plate, said head plate also including a plurality of openings for nail placement and holding of the second workpiece during jacking, said head plate further including a retaining surface capable of abutting the second workpiece; and

said carrier and said head plate cooperate with said upwardly jacking means permitting the first and second workpieces to be permanently aligned adjacent and in functional relationship to one another.

4,552,338

DEVICE FOR PUSHING OR PULLING ELONGATE WIRE- OR ROD-SHAPED ELEMENTS THROUGH CONDUITS

Per Lindgren, Vingåker, Sweden, assignor to Company PAX, Halleforsnas, Sweden

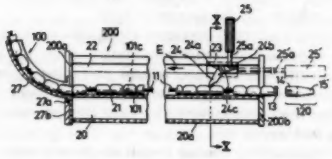
Filed Jun. 30, 1983, Ser. No. 509,968
Claims priority, application Sweden, Jul. 13, 1982, 8204296
Int. Cl.⁴ B65H *59/00*
U.S. Cl. 254—134.3 FT **18 Claims**

1. A device for displacing a conduit draw wire through a

conduit, comprising an elongate apparatus body with a first track for a selected length of said conduit draw wire and a carrier means for transporting said conduit draw wire element in the track during a feeding stroke and releasing it during a return stroke, wherein an equilong parallel second track is provided in the body for a runner, said carrier means is mounted on said runner and a handle projecting from the body is provided to drive the runner in said second track in alternating feeding strokes and return strokes, said conduit draw wire comprising a selected length of an elongate bendable member onto which is slipped a plurality of rigid beads with axial bores, the beads being arranged in a plurality of groups each of which comprises at least a first and a second end bead, each group being separated by an interspace from a neighboring group, a plurality of helical compression springs being provided, each having a middle part and two end parts and each spring being arranged in one of said interspaces to bear by said end parts against end beads of said groups disposed adjacent a respective interspace so as to push the groups apart, said member being at both ends firmly attached to end pieces and having a length selected so as to constantly keep said springs in a partially compressed state.

7. A device for feeding a flexible conduit draw wire through a conduit, comprising a combination:

an elongate apparatus body having a front end and a rear end;



a first elongate track for a selected length of the draw wire and extending in said body between said two ends thereof;

a second elongate track for accommodating a runner for smooth gliding movement and extending parallel and equilong with said first track;

a first elongate slot in said body extending parallel and equilong with said two tracks and providing access into the first track along the entire length thereof;

a driver engageable with said length of draw wire accommodated in said first track during a feeding stroke and releasing it during a reverse return stroke;

a runner movably mounted for continuous gliding reciprocating movement in said second track and carrying said driver which passes through said first slot into said first track to selectively engage there and release said length of conduit wire;

a rod for driving said runner in continuous reciprocating gliding movement in said second track for a feeding stroke and a return stroke of said driver, said rod being at a first end rigidly affixed to the runner, and an intermediate part thereof passing through an elongate opening extending in said body parallel and equilong with the first said track, and a second end projecting from said body; and

an operating handle mounted on said second end.

4,552,339

HOISTING DEVICE WITH COMPENSATED TACKLE

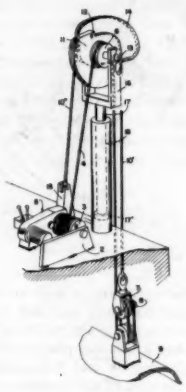
Theo F. H. Werners, Bilthoven, and Berend W. Drenth, Drunen, both of Netherlands, assignors to Hydraudyne B.V., Boxtel, Netherlands

Filed Jun. 5, 1984, Ser. No. 617,387

Claims priority, application Netherlands, Jun. 6, 1983, 8302006

Int. Cl.[4] B66D *1/50*

U.S. Cl. 254—277 **14 Claims**



10. A hoisting device for suspending a load from a floating hull subjected to vertical wave motion, comprising the combination of:

a tackle assembly comprising an upper block having at least one pulley and a lower block having at least two pulleys and provided with load supporting means;

a winch on said hull and a hoisting cable wound thereon, said hoisting cable being passed over one of said two pulleys of said lower block, over said one pulley of said upper block, over the other of said two pulleys of said lower block and then into connection with said upper block;

carrying cable means for suspending said upper block from said hull; and

motion compensating means for simultaneously reeling in and paying out said carrying cable means to maintain said lower block at a substantially fixed vertical position despite vertical motion imparted to said hull, said motion compensating means comprising pressure actuated means which is expandable and retractable to reel in and pay out said carrying cable means while its actuating pressure varies in response to expansion and contraction, and means responsive to expansion and contraction of said pressure actuated means for varying the resistance to expansion and contraction thereof in consonance with variation of said actuating pressure.

4,552,340

PORTABLE WINCH

Joseph R. Sheppard, Oregon City, Oreg., assignor to True Dimension Inc., Oregon City, Oreg.

Filed Sep. 29, 1983, Ser. No. 537,094

Int. Cl.[4] B66D *3/18*

U.S. Cl. 254—358 **6 Claims**

1. A portable winch comprising

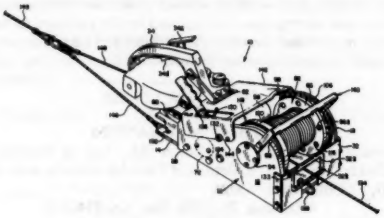
a chain saw motor unit including a gasoline-powered engine, a housing for the engine, a motor output shaft with clutch driven by the engine, said output shaft extending laterally of the chain saw motor unit,

an elongate frame including an elongate base and opposed

upstanding sides extending upwardly from opposed side margins of said base joined to said base,

means securing said housing of the chain saw motor unit to the base of said frame adjacent one end of said frame with the chain saw motor unit disposed above said base and with an end of the motor unit facing toward the opposite end of said frame and with said motor output shaft above and extending transversely of said frame base,

a winch drum assembly including a winch drum and drum shaft means extending axially of the drum and having ends projecting from opposite ends of the drum, said winch drum assembly being located between said frame sides and above said base adjacent said opposite end of said frame, bearings journaling said ends of said drum shaft on said frame sides,



a speed-reducing transmission including input and output shafts which extend out from opposite sides of the transmission, said transmission being secured to said frame with the transmisssion positioned intermediate the chain saw motor unit and said drum assembly and between said frame sides with said ends extending inwardly therefrom, bearings journaling said input and outputs shafts on said sides of the frame,

first power-transmitting means extending longitudinally of said frame inwardly of the frame sides connecting the clutch of the motor output shaft and the input shaft of the speed-reducing transmission, and second power-transmitting means extending longitudinally of said frame with said input and output shafts extending inwardly therefrom inwardly of the frame sides connecting the output shaft of said speed-reducing transmission and said drum shaft.

4,552,341

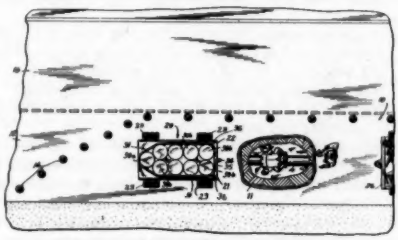
METHOD OF PROTECTING A ROADWAY MAINTENANCE AND CONSTRUCTION SITE

Stanley Zucker, 15 Mary Beth Dr., Suffern, N.Y. 10901, and Fritz Schwarting, 477 Beverly Rd., Ridgewood, N.J. 07450

Filed Dec. 22, 1982, Ser. No. 452,151

Int. Cl.[4] E04H *17/00*

U.S. Cl. 256—1 **11 Claims**



1. A method of protecting a roadway maintenance or construction site, comprising, in combination:

mounting a crash cushion on the bed of an unpowered wheeled vehicle, the bed of the unpowered vehicle being vertically movable relative to the wheels;

releasably connecting the unpowered vehicle to a powered towing vehicle;

towing the unpowered vehicle to the site and locating the same in position to block oncoming traffic at said site;

disconnecting the unpowered vehicle in said blocking position from the towing vehicle, to enable the movement of the towing vehicle to a remote location; and

lowering the bed of the unpowered vehicle relative to the wheels until the lowermost portion of the vehicle rests on the surface of the roadway with the bed lying on said roadway, thereby maintaining the crash cushion in a fixed and favorable position to protect the maintenance or construction crew as well as the occupants of any vehicle coming in contact with the crash cushion.

4,552,342

METHOD AND APPARATUS FOR PREHEATING AND CHARGING SCRAP IN STEELMAKING

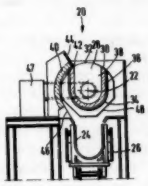
Karl Hein, Moers, Fed. Rep. of Germany; Markus Hubig, Hergenrath, Belgium, and Helmut Seroka, Bochum, Fed. Rep. of Germany, assignors to Klöckner CRA Technologie GmbH, Duisburg, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,354

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307940

Int. Cl.[4] C21B *7/00*

U.S. Cl. 266—175 **11 Claims**



1. An apparatus for preheating and then charging scrap metallic materials into a steelmaking converter, said apparatus comprising

an elongated furnace which includes an elongated heating chamber therein, an elongated opening for enabling scrap metallic materials to be supplied to and removed from said heating chamber, and means for enabling the scrap metallic materials in said heating chamber to be heated, said elongated furnace defining an imaginary longitudinal axis therethrough,

covering means for said elongated opening and thus enclosing the heating chamber in said elongated furnace,

support means mounting said elongated furnace such that said imaginary longitudinal axis therethrough is horizontal, said support means enabling said furnace to rotate about a pivot axis which is parallel to said imaginary longitudinal axis from a charging position wherein its elongated opening is generally upwardly directed to a discharging position wherein its elongated opening is generally downwardly directed, and

an elongated transportable charging trough positionable below and alignable with said elongated furnace, said elongated charging trough including a storage chamber therein and an elongated mouth, said elongated mouth enabling heated scrap metallic materials which are discharged from said elongated furnace when in its discharging position to pass into said storage chamber and enabling the heated scrap metallic materials to thereafter be removed therefrom and charged into a steelmaking converter, said storage space having a volume at least equal to the volume of the heated chamber in said furnace and said elongated mouth having a length and width at least equal

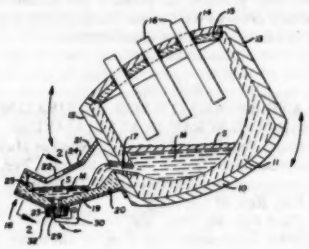
to the length and width of said elongated opening of said furnace.

4,552,343

COMBINATION ELECTRIC FURNACE AND SLAG RETAINING POURING SPOUT

Michael D. Labate, Ellwood City, and Joseph A. Perri, Coraopolis, both of Pa., assignors to Insul Company, Inc., East Palestine, Ohio

Filed May 13, 1985, Ser. No. 732,941
Int. Cl.[4] C21C *5/44, 5/52*
U.S. Cl. 266—200 **11 Claims**



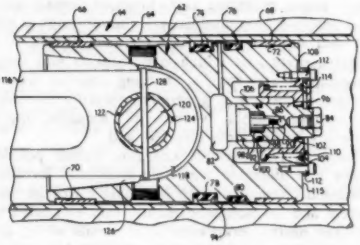
1. The combination of an electric steel making furnace which has a tap hole and a slag retaining pouring spout in communication with said tap hole, said slag retaining pouring spout extending outwardly from said steel making furnace in an outwardly and upwardly angled configuration, said slag retaining pouring spout having a secondary tap hole therein and said electric furnace being arranged to be tilted so as to move said slag retaining pouring spout in a generally vertical arcuate path whereby tilting said electric furnace to move said slag retaining pouring spout downwardly will cause molten slag and metal in said electric furnace to flow through said tap hole into said slag retaining pouring spout, a closure removably affixed in said secondary tap hole for retention therein whereby said molten slag and molten metal are retained in said slag retaining pouring spout for a period of time sufficiently to float said slag above said secondary tap hole.

4,552,344

BARRIER FLUID SEALED PISTON FOR ROAD WHEEL SUSPENSION

D. Dale Johnson, Mt. Clemens, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 12, 1983, Ser. No. 530,939
Int. Cl.[4] F16F *9/36*
U.S. Cl. 267—64.11 **2 Claims**



1. A self-contained road wheel suspension system comprising in combination, a spindle fixedly secured to a vehicle hull, a road arm having a spindle housing on one end and a road wheel support on the opposite end thereof, bearing means for supporting said spindle housing for rotation relative to said spindle, a fluid filled crankcase defined by said spindle housing and said spindle, mechanically operated single chamber gas spring means at the opposite end of said road arm, said gas spring means including a gas volume and a first piston relatively reciprocated with respect to said arm, seal assembly means carried by said piston and barrier means defining a pressurized oil barrier in said first piston to lubricate and preload the seal assembly means to seal the gas volume; said barrier means including an oil charge port, means forming a chamber in said first piston filled with oil, and means including a spring carriage and a spring for biasing said oil barrier without flow restriction to lubricate and pressure preload said seal assembly means to a pressure greater than that of said gas spring means to produce a predetermined pressure differential across the seal means to maintain the seal lubricated during dynamic operation of said first piston, said barrier means further including a movable second piston carried by said first piston and having one end exposed to the pressure of said gas spring means and the opposite end forcing oil to lubricate and preload the seal assembly means.

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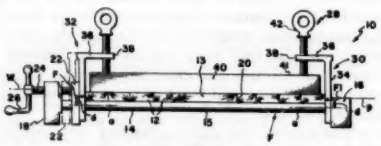
CLAMP MECHANISM

Steven J. Benda, 6712 Glendower Rd., Apt. B, Raleigh, N.C. 27612; George M. Kivisto, and Paul M. Kivisto, both of Box 47, Cokato, Minn. 55321

Filed Jan. 26, 1984, Ser. No. 574,034
Int. Cl.[4] B25B *1/20*
U.S. Cl. 269—43 **13 Claims**



1. A workpiece holder for clamping a plurality of elongate side-by-side abutting co-planar strips of wood to be joined, each of said strips including top and bottom surfaces spanned by lateral side edge surfaces which abut the adjacent side edge surfaces of adjacent strips, said holder comprising:

transversely extending linear support means for supporting a plurality of longitudinally extending coplanar strips of wood in side-by-side relation;

a pair of opposed, laterally spaced apart clamping blocks;

means mounting said clamping blocks on said support means for relative lateral movement toward and away from each other between non-clamping positions, spaced apart a predetermined distance, and less spaced apart clamping positions to exert edgewise pressure on said strips and to clamp said plurality of strips therebetween;

means reacting between said support means and said clamping blocks for moving said clamping blocks between said clamping and non-clamping positions;

anti-bowing means for precluding the upward bowing of said strips out of the plane of said strips when said clamping blocks are in said clamping positions exerting edgewise clamping pressure on said strips, comprising:

laterally extending hold-down means disposed above and spanning said strips;

means coupled to said clamping blocks for movement therewith and for movement relative thereto for vertically moving said hold-down means between a raised inoperaive position and a lowered strip clamping position for exerting downward pressure on said hold-down means and said strips to clamp said strips to said support means and prevent them from moving upwardly out of the plane of said strips;

said anti-bowing means comprising a pair of bracket means mounted on said support means for relative movement

with said clamping blocks; said bracket means extending laterally inwardly of said support means and having a portion thereof overlying said strips.

4,552,346

OPERATING TABLE

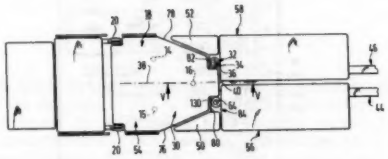
Eberhard Schnelle; Hans-Ulrich Jung, both of Rastatt, and Werner Hetzel, Ottersweier, all of Fed. Rep. of Germany, assignors to Stierlen-Maquet AG, Rastatt, Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 494,669

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218328

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—322 **1 Claim**



1. An operating table for operations on the extended extremities of patients, said table comprising a frame, a support plate for the upper body of the patient arranged on said frame, which support plate has an end section usable to support the pelvis of the patient, a support arm provided on said frame below said support plate and which arm extends along the longitudinal middle plane of said support plate and has a free forward end located below the forward side of said end section, said free forward end of said support arm having two vertical counterbar receiving openings located on opposite sides of the longitudinal middle plane of said support plate and each of which openings is displaced outwardly from said middle plane by less than half the largest width of said support plate, and a counterbar adapted to be removably inserted in either one of said two vertical counterbar receiving openings of said arm and which counterbar when so inserted extends vertically upwardly beyond the top surface of said support plate, said counterbar receiving openings being located near said forward side of said end section so that when said counterbar is inserted in either one of said counterbar receiving openings it is engageable with the pelvic area of a patient lying with his upper body on said support plate, said support plate having an end section of trapezoidal shape which tapers to its forward side, said free end of said support arm also having means providing two horizontally directed aligned receiving openings extending in opposite directions transversely to said longitudinal middle plane of said support plate and having identical non-circular cross-sections, and two supplemental devices each insertably fastenable in one of said transversely extending receiving openings by means of a horizontal pin on said supplemental device, each of said supplemental device being in the form of a triangular support plate, said two devices when their pins are inserted in said transversely oriented receiving openings being arranged so that said trapezoidally shaped end section is enlarged by said triangular support plates to at least approximately a rectangular form whose width is at least approximately as large as the width of the section of said support plate adjacent to said end section.

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X-RAY APPARATUS COMPRISING A TABLE-TOP WHICH IS DISPLACEABLE IN THE LONGITUDINAL DIRECTION

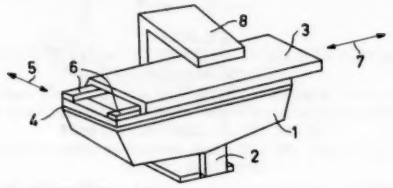
Manfred Wallis, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1983, Ser. No. 555,845

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244579

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—322 **5 Claims**



1. A patient table for an X-ray apparatus, said table comprising:

a carriage;

a table top slidably arranged on the carriage to be displaceable in a longitudinal direction;

at least two rotatable sprockets arranged on the carriage and spaced from each other in the longitudinal direction, each sprocket having teeth;

a motor for rotating one of the sprockets;

an endless chain loop arranged around the sprockets, said chain having links engaged by the teeth of the sprockets; and

a plurality of coupling elements attached to the table top, said coupling elements being spaced from each other in the longitudinal direction and being arranged to engage the chain links;

characterized in that:

the chain has a pitch equal to the length of the chain divided by the number of links in the chain;

adjacent teeth of the sprockets are separated circumferentially by a distance equal to twice the pitch of the chain so that the teeth of the sprockets engage only every other chain link;

adjacent coupling elements are separated by a distance equal to twice the pitch of the chain so that the coupling elements engage only every other chain link; and

the coupling elements engage only links which are not engaged by the teeth of the sprockets.

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COUCH FOR PATIENTS

Bernd Forssmann, Friedrichshafen; Hans-Heinrich Gerth, Meersburg; Hendrik Zech, Überlingen, and Christian Chaussy, Germering, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 5, 1983, Ser. No. 455,836

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201021

Int. Cl.⁴ A61G *15/00*

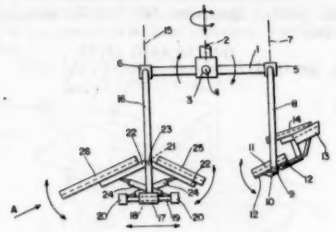
U.S. Cl. 269—324 **6 Claims**

1. A couch for reliably supporting and fixing in place a completely or partially anesthesized patient in a strain-free and compression-free manner, for instance to comminute renal calculi in a contact-less manner by means of shock waves,

comprising four individually adjustable rests and support surfaces respectively for the two arms, the head and the shoulder of a person, the supports for the two arms being

situated next to and to the side of the support for the head, above the support for the shoulder;

two separate pairs of rests and supports for the legs of the person being spaced from the said four support surfaces for establishing an unsupported area for the back of the person down from his or her shoulder to the thighs;



said two separate pairs of rests and supports each being tiltable on longitudinal parallel axes, and the rests and supports of each pair being inclinable in relation to each other.

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PROGRAMMABLE PACKAGING GRID FOR LOOP GRIPPER PRODUCT CONVEYOR SYSTEM

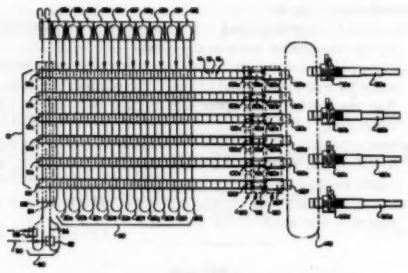
Jerold C. Loos; James R. Wakefield, both of Rocky River, and Frederick S. Foster, Avon Lake, all of Ohio, assignors to Hall Systems, Inc., Westlake, Ohio

Continuation of Ser. No. 365,566, Apr. 5, 1982, Pat. No. 4,484,733. This application Jul. 30, 1984, Ser. No. 635,500

The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.

Int. Cl.[4] B65H *39/02*

U.S. Cl. 270—54 **11 Claims**



1. A programmable packaging grid for grouping selective ones of a plurality of available products to produce customer insert packages comprising:

a plurality of longitudinally extending receiving conveyors each defining a plurality of package receiving areas;

a receiving conveyor monitor means for monitoring the position of the receiving conveyors;

a plurality of gripping conveyors disposed above the receiving conveyors, each gripping conveyors including a plurality of individual grippers running in a loop generally transverse to the receiving conveyors;

a plurality of sources of products, each product source disposed adjacent a gripping conveyor to supply products thereto;

a gripper conveyor monitor means for monitoring the position of the gripper conveyors;

control means for controlling the gripping conveyors to transfer selected products into selected receiving conveyor package receiving areas, the control means being operatively connected with the receiving conveyor monitor means and the gripper conveyor monitor means for determining coincidence between the receiving conveyor package receiving areas and the individual grippers.

4,552,350

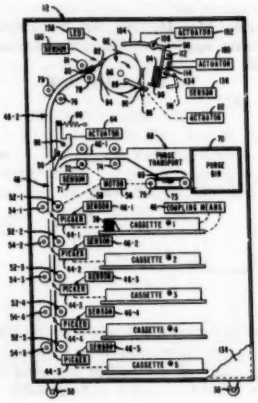
TRANSPORT FOR DIVERTED AND PURGED SHEETS IN A SHEET DISPENSER

Charles S. Nagy; Dale L. Placke, both of Dayton; Jack R. Gross, Waynesville, and Robert H. Granzow, Miamisburg, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 28, 1984, Ser. No. 594,452

Int. Cl.[4] B65H *5/22*

U.S. Cl. 271—3 **5 Claims**



1. A transport system for use with a sheet dispenser comprising:

means for collecting sheets to be dispensed;

a collecting bin positioned below said collecting means to receive sheets to be purged from said collecting means;

a purge bin having an entrance thereto, with said entrance being located near the bottom of said purge bin;

an endless belt means positioned at the bottom of said collecting bin to receive said sheets to be purged, with said endless belt means having a discharge end;

said endless belt means and said entrance to said purge bin being positioned so that said discharge end is positioned adjacent to said entrance;

means for moving said endless belt means in a direction which moves the sheets carried by said endless belt means into said entrance area; and

bias means to resiliently bias said sheets against said discharge end of said endless belt means to facilitate the moving of said sheets into said entrance of said purge bin.

4,552,351

BILL STORING MECHANISM FOR AUTOMATIC TELLER MACHINES

Katsura Tsukamoto, Ninomiya, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,294

Claims priority, application Japan, Aug. 6, 1982, 57-136402

Int. Cl.[4] B65H *5/22*

U.S. Cl. 271—3.1 **2 Claims**

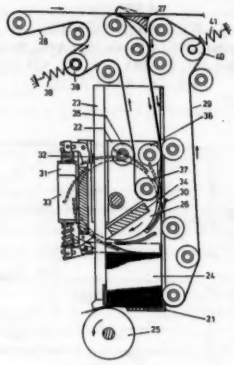
1. A bill storing mechanism for an automatic teller machine comprising:

a bill feed path;

a bill receiving casing;

a paddle wheel assembly having at least one paddle wheel in said casing for receiving a bill and positively stacking said bill in said casing;

variable length transport means between said feed path and said paddle wheel for transporting said bill from said feed path to said paddle wheel;



guide means for slidably guiding said paddle wheel assembly in the direction of bills being stacked in said casing;

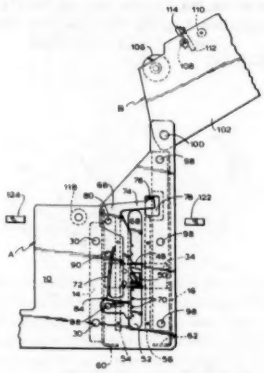
press means for pressing the most recently stacked bills against the stack to move the paddle wheel assembly away from the stack and at the same time provide a uniform pressure on the stack to permit reliable feeding of bills from the other end of the stack.

4,552,352

TOP LOADING SHEET FEED APPARATUS FOR PRINTER OR THE LIKE

Richard C. Nickels, Jr., Reisterstown, and Gerald S. Stevens, Jr., Forest Hill, both of Md., assignors to General Instrument Corp., New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,872
Int. Cl.[4] B65H *13/64*
U.S. Cl. 271—10 **43 Claims**



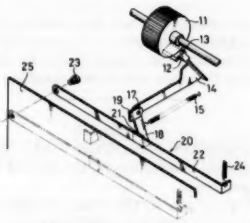
1. Sheet feed apparatus comprising means for retaining a stack of sheets, said retaining means having an end through which sheets can be loaded onto the stack, means for continuously urging said stack towards said end, means, normally situated in an operational position relative to said end to cooperate with said stack, for removing sheets from said stack in sequence, said removing means being movable relative to said end, between said operational position wherein said stack is maintained within said retaining means by said removing means against the action of said urging means, and a load position remote from said end wherein said stack is no longer maintained within the retaining means by said removing means against the action of said urging means, and means, actuated in response to said movement of said removing means from said operational position toward said load position, for preventing substantial movement of said stack toward said end when said movement preventing means is actuated.

4,552,353

DOUBLE-FEED PREVENTION DEVICE IN PAPER FEEDING APPARATUS

Kazunori Tanaka, Atsugi, and Mitsuru Yoshikawa, Zama, both of Japan, assignors to Duplo Seizo Kabushiki Kaisha, Japan

Filed Dec. 20, 1983, Ser. No. 563,353
Claims priority, application Japan, Dec. 20, 1982, 57-221955
Int. Cl.[4] B65H *3/52*
U.S. Cl. 271—124 **8 Claims**



1. A double-feed prevention device in a paper feeding apparatus including a paper feeding roller and a cooperating paper separating plate adapted to feed single sheet of paper therebetween from a stacked supply of sheets, which comprises said paper separating plate being carried on a lever means in pivotal movement toward and away from said paper feeding roller, a lever biasing means arranged to move said lever means in a first direction and bias said paper separating plate toward said paper feeding roller, a stopper means arranged to restrict the movement of said lever means in a second direction opposite to said first direction by mechanical engagement with a part of the lever means, and a stopper biasing means arranged to movably bias said stopper means into mechanical engagement with the lever means as said lever means moves in said first direction and thereby prevents the movement of said paper separating plate away from said paper feeding roller.

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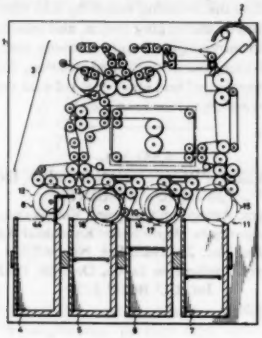
DEVICE FOR OPENING AND CLOSING PUSH COVER OF NOTE CONTAINER BOX FOR USE IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Koichi Goi; Junichi Arikawa; Hideyuki Ebihara, and Hiroshi Chiba, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,056
Claims priority, application Japan, Feb. 4, 1982, 57-16597
Int. Cl.[4] B65H *31/00, 33/14*
U.S. Cl. 271—163 **3 Claims**

1. A device for opening and closing a bank note container box for use in an automatic money depositing and disbursing machine and having an upper opening through which bank notes are pulled out and stacked, which comprises a push cover hinged at the vicinity of said upper opening of said box to open and close the same, said push cover being closed to push the aft end of the upper surface of the uppermost bank note just being pulled out during the operation of pulling bank

notes out of said box, a swingable lock member for engaging with said push cover to hold the same normally at the closed condition, a swingable unlock member for swinging said lock member to release said push cover during the operation of



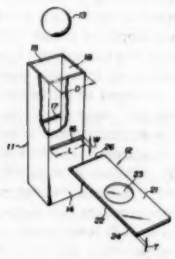
stacking bank notes into said box, and an opening arm for operating said unlock member to release said push cover from the locked condition and having means for guiding said push cover between the open and closed positions.

4,552,355

PENETRATION-THROUGH-WALL MAGIC SET

Shigeru Sugawara, Tokyo, Japan, assignor to Tenyo Company, Ltd., Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 617,020
Int. Cl.[4] A63J *5/00*
U.S. Cl. 272—8 R **5 Claims**



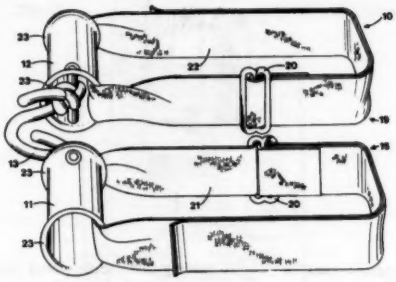
1. A-penetration-through-wall magic set, comprising:
a hollow tube open at opposite ends thereof and having a tube bore;
a pair of slots in said tube opposite to each other with their common plane perpendicular to said tube;
a gimmicked panel including a solid piece as wide as the length of said slots in said tube, said solid piece having an opening smaller than said tube bore, and a solid pliable piece as wide as said solid piece stuck at one end thereof to one end of said solid piece and overlapping said solid piece;
an object capable of passing through said opening in said solid piece of said gimmicked panel;
said solid pliable piece at its free end extending beyond the free end of said solid piece so that when solid piece and said solid pliable piece are inserted across said tube through one slot towards the other slot at a slight angle, said free end of said solid pliable piece abuts the inner wall of said tube adjacent said other slot so as to be separated from said solid piece, said solid piece then being aligned with said other slot so that on extension of said solid piece through and beyond both slots, said free end of said solid pliable piece travels along the inner wall of said tube bore so that said object on being dropped into said tube and through said opening in said solid piece pushes said solid pliable piece aside and falls completely through said tube bore.

4,552,356

EXERCISE DEVICE

Francis J. Brousseau, 3052 Kingsbridge Ave., Bronx, N.Y. 10463

Filed Jul. 9, 1984, Ser. No. 628,912
Int. Cl.[4] A63B *21/02*
U.S. Cl. 272—137 **8 Claims**



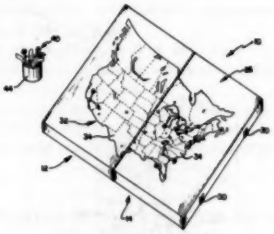
1. An exercising harness for exercising the arms and legs in unison, comprising first and second means defining handle portions, first and second inelastic leg attachment strap members each being attached directly to said first and second handle portions, said leg attachment strap members having means adapted to receive insertion of a leg of an exerciser, said inelastic leg attachment strap members further comprising means to adjust said strap to receive different leg lengths, and an elastic member disposed between said first and second handle portions and fixed to each said handle.

4,552,357

SPORTS GEOGRAPHY JACKSTRAW GAME

Leo C. Di Egidio, 32874 Burlwood Dr., Solon, Ohio 44139

Continuation of Ser. No. 428,626, Sep. 30, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 646,020
Int. Cl.[4] A63F *9/00, 3/04*
U.S. Cl. 273—1 GG **11 Claims**



1. A game of jackstraws, comprising:
a game board having a top surface and a bottom surface;
a map displayed on the top surface of the game board;
a plurality of jackstraw-receiving means on the game board, said jackstraw-receiving means being located in the vicinity of pre-determined geographic sites displayed on said map, the pre-determined geographic sites identifying cities having major league sports teams; and

a plurality of jackstraws, each having an elongate stem portion having a generally constant cross-section and a length to width ratio greater than 10, and an end portion having game indicia thereon, the end portion being larger than the cross-section of the stem portion, the stem portion adapted to be inserted into the jackstraw-receiving means, each of the jackstraws also including indicia corresponding to a selected geographic site, the game indicia being in the form of three-dimensional representations of sports equipment corresponding to sports equipment utilized by major league sports teams in the pre-determined geographic sites.

9. A method of playing a game of jackstraws, comprising the steps of:

providing a game board having a top surface and a bottom surface;

providing a map on the surface of the game board;

providing a plurality of jackstraw-receiving means on the game board, said jackstraw-receiving means being located in the vicinity of pre-determined geographic sites displayed on said map;

providing a plurality of jackstraws, each having an elongate stem portion, a first end portion having game indicia thereon, and a second end portion adapted to be inserted into the jackstraw receiving means, each of the jackstraws also including indicia corresponding to a selected geographic site; and

tossing the jackstraws into a jumbled heap, removing jackstraws one at a time from the heap without disturbing the heap, and inserting removed jackstraws into jackstraw-receiving means corresponding to indicia contained on the removed jackstraws.

4,552,358

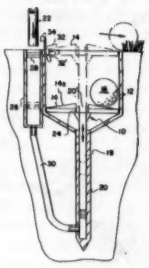
GOLF BALL EJECTOR FOR GOLF GREEN HOLE LINER

John J. McGlew, Box 823, Tuxedo Park, N.Y. 10987

Continuation of Ser. No. 398,597, Jul. 15, 1982, Pat. No. 4,496,150. This application Jan. 30, 1984, Ser. No. 564,290

Int. Cl.[4] A63B *57/00*

U.S. Cl. 273—34 A **3 Claims**



1. A flag pole-actuated golf ball ejection device for use by a golfer on a golf course having a hole comprising a liner for said hole, a golf ball support positioned in said liner and being movable upwardly and downwardly therein, a fluid pressure cylinder alongside said liner, a piston movable in said cylinder and having a portion exposed for engagement by the flag pole, a pressure fluid in said cylinder movable by movement of said piston, and means connected to said golf ball support and movable by the fluid in said cylinder in response to displacement of said piston to move said golf ball support upwardly to present a golf ball which has entered into the hole liner at a higher level which is convenient so as to be picked up by the golfer.

4,552,359

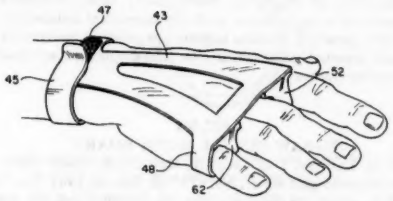
FIXED HAND SPAN DEVICE FOR BOWLER

Jerry D. McDonald, 6782 Paul Revere Ct., Orlando, Fla. 32809

Filed Feb. 22, 1984, Ser. No. 582,533

Int. Cl.[4] A61B *71/02*

U.S. Cl. 273—54 B **15 Claims**



1. A semi-rigid device utilized on the hand for support in bowling, comprising a generally triangularly shaped member designed for insertion entirely between two fingers of the hand, and securing means attached to said member, said securing means encircling at least part of the hand or wrist of the user, for preventing dislodgement of said member from the selected position between the fingers.

4,552,360

VIDEO GAME WITH CONTROL OF MOVEMENT AND RATE OF MOVEMENT OF A PLURALITY OF GAME OBJECTS

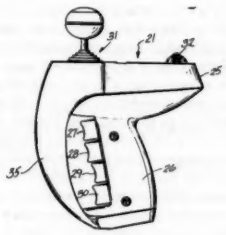
Eric Bromley, West Simsbury, and Robert A. Schenck, Hebron, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 430,351, Sep. 29, 1982, Pat. No. 4,462,594. This application Feb. 13, 1984, Ser. No. 579,709

The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.

Int. Cl.[4] A63F *9/22*

U.S. Cl. 273—85 G **20 Claims**



14. In a video game which comprises a memory adapted to store at addressable locations numerical positional data of locations of a plurality of game objects on a video display which are movable under player control, and the game objects are read out for display in accordance with the beam location on the video display, a player operated directional control for selecting direction of movement of a game object, the improvement comprising,

player operated means for selecting one or more game objects for movement, a plurality of game object direction registers, said direction registers being responsive to said direction control and said means for selecting game objects to establish an indication of each game object selected for movement and the direction of movement thereof,

a plurality of game object position registers each adapted to

store a numerical indication of the positon of a game object,

a source of clock pulses, and means responsive to the indications in said direction registers and said clock pulses for periodically updating the game object numerical indications of selected game objects in said position registers, said numerical indications of the display positions of said plurality of objects in said memory being periodically updated in accordance with the numerical indications in corresponding position registers to produce movement of said selected game objects on said display on successive display frames.

4,552,361

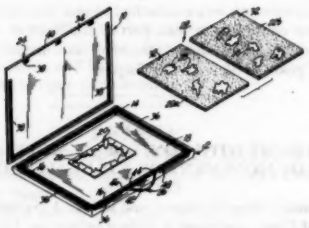
JIG-SAW PUZZLE WORK BOARD

Robert H. LaFleur, 1729 Cresthill, Royal Oak, Mich. 48073

Continuation-in-part of Ser. No. 419,966, Sep. 20, 1982, Pat. No. 4,479,651, which is a division of Ser. No. 236,803, Feb. 23, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 581,735

Int. Cl.[4] **A63F** *9/10*; **B65D** *85/00*

U.S. Cl. 273—157 R **3 Claims**



1. A portable jig-saw puzzle work board comprising a substantially rectangular frame forming a rim having an edge bordering a substantially rectangular recess, a resilient padding having dimensions permitting said padding to be removably fitted into said recess with a snug fit, a removable lid for retaining said padding in said recess and fastening means for removably affixing said lid across said rim of said frame, wherein a substantially flat work surface is formed across the bottom of said recess, said padding has a thickness substantially corresponding to the distance from said rim of said frame to said work surface formed at the bottom of said recess and, said fastening means comprising Velcro material attached to said rim of said frame and complementary Velcro material attached to a marginal surface of said lid, said Velcro material being in the form of a plurality of strips disposed proximate and extending parallel to the edge of said frame rim and said complementary Velcro material being in the form of a plurality of strips disposed proximate and extending parallel to each edge of said lid, wherein substantially less complementary Velcro material is provided along one edge of said lid than is provided along the other edges of said lid so that said lid has less adhesion to said rim of said frame along one edge than along said other edges.

4,552,362

GAME TABLE WITH MULTIPLE PLAYING SURFACES

Hugh F. Oake, 1607 S. Mullen St., Tacoma, Wash. 98405

Filed Feb. 6, 1984, Ser. No. 577,254

Int. Cl.[3] **A63F** *3/00*

U.S. Cl. 273—237 **10 Claims**

1. A multiple playing surface game table having the appearance of a piece of furniture, comprising:

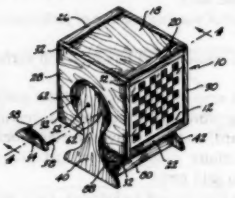
a rigid base including two parallel upright end standards,

a trunnion bar extending between and supported by said end standards,

a generally cubical game board assembly including two end panels and four side panels, said two end panels including bearing means supporting said assembly for rotation on said trunnion bar between the base end standards, said side panels comprising at least three different game board surfaces, and lock means for engaging and preventing relative rotation between at least one of the end standards and the adjacent end panel of the cubical assembly, said lock means including:

a hole through one of the end standards,

a hole in the end panel of the cubical assembly adjacent said end standard, arranged so that the adjacent said end standard covers said end panel hole from view at all times, and



a pin means removably insertable through said end standard hole into said end panel hole, the pin means when so inserted locking the cubical assembly against rotation relative to the end standard with any one of the assembly side panels in an upper horizontal position, said pin means being arranged on and being manipulated by handle means covering said end standard hole from view when said handle means is engaged, said handle means also providing a grip surface exteriorly of the end standard for manual engagement by a user in lifting and moving the game table.

4,552,363

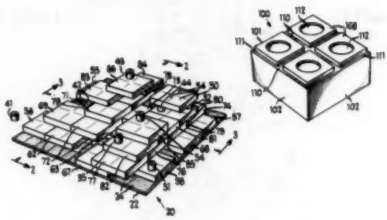
BOARD GAME HAVING STACKABLE TILES AND MOVEABLE PLAYING PIECES

Steven F. Rehkemper, Chicago; Donald A. Rosenwinkel, Oak Park; John V. Zaruba, Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 14, 1983, Ser. No. 550,967

Int. Cl.[4] **A63F** *3/00*

U.S. Cl. 273—241 **16 Claims**



1. A game for two players comprising:

a plurality of pieces;

the pieces including a set of cylindrical tokens assigned to each player;

each token having opposed ends;

the opposed ends of each token having means designating the number of moves that may be made with the token and means associating each end with one of the players;

the pieces also including tiles useable by each player;

each of the tiles having a bottom and a top surface divided into four congruent spaces;

the top surface of each of the tiles further including:

first key means for positioning an end of a cylindrical token on each of the spaces;

second key means for the positioning of the bottom of another of the tiles on each of the spaces of the top surface; and

each of the tiles being adapted to be supported upon a combination of underlying pieces.

4,552,364

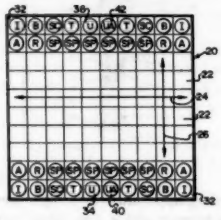
METHOD OF PLAYING STRATEGY GAME

Jeffery J. Shaffer, 313 East St., Oregon City, Oreg. 97045

Continuation of Ser. No. 287,072, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 93,309, Nov. 13, 1979, abandoned. This application Apr. 30, 1984, Ser. No. 631,501

Int. Cl.⁴ A63F *3/02*

U.S. Cl. 273—260 **1 Claim**



1. A method of playing a board game comprising:

(a) providing a game board having a predetermined matrix of playing spaces arranged in ranks and files;

(b) providing distinguishable first and second opposing sets of playing pieces;

(c) providing two additional playing pieces, one of said additional playing pieces being identifiable with each of said sets of playing pieces and being distinguishable from each of the individual playing pieces in said set;

(d) completely filling a predetermined number of ranks of said spaces with playing pieces from each of said sets;

(e) moving a single playing piece of said first set on said game board according to predetermined rules of play;

(f) moving a playing piece of said second set on said game board according to said rules of play;

(g) alternatingly repeating steps (e) and (f);

(h) after repeating steps (e) and (f) a first predetermined number of times greater than zero, and before repeating steps (e) and (f) a second predetermined number of times greater than said first predetermined number of times, placing said respective additional playing pieces on said game board in any space not then occupied by one of said playing pieces; and

(i) thereafter alternatingly repeating steps (e) and (f) until one of said additional playing pieces has been captured by movement of one of said playing pieces from the opposing set onto the space occupied by said additional playing piece.

4,552,365

ELASTIC TUBULAR LOOPED PROJECTILE

Wayne G. Smith, 10129 Lowell Ave., Overland Park, Kans. 66212

Division of Ser. No. 330,073, Dec. 14, 1981, Pat. No. 4,436,077. This application Jan. 16, 1984, Ser. No. 570,959

Int. Cl.⁴ A63H *27/00*

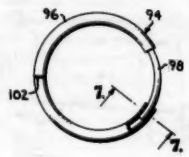
U.S. Cl. 273—425 **11 Claims**

1. A loop missile for projection from a gun, said missile comprising:

an elongated, elastic tube;

said elastic tube being sufficiently elastic to permit stretching over the barrel of a gun from the free end of a barrel to the opposite end where a trigger is located; and

an elongated, transversely circular, flexible rod, each end of said rod being secured to a corresponding end of said tube



in a manner so that the tube and rod conjointly define a closed loop, the tube ends being spaced apart and the rod extending across the gap between said ends, whereby a portion of a gun may engage the rod in said gap to project the missile.

4,552,366

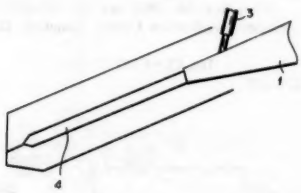
METHOD FOR PRODUCING A SEAL STRIP FOR A CRACK BETWEEN TWO COMPONENTS MOVING IN RELATION TO ONE ANOTHER

Vesa Liukkonen, and Mika Liukkonen, both of Vehmarontie 4 as 61, 20540 Turku 54, Finland

Filed Apr. 15, 1983, Ser. No. 485,168

Int. Cl.⁴ B29F *3/10;* **B32B** *3/00;* **H05K** *9/00*

U.S. Cl. 277—1 **3 Claims**



1. A method of sealing a joint, which comprises the steps of:

squeezing a flowable tubular bead of a settable material along said joint from a nozzle having a configuration whereby a hole remains in said bead running the length thereof after said bead has been deposited at, and adhered to, said joint; and

setting said bead to a flexible strip retaining said hole therein.

4,552,367

HUB SEAL AND AXLE ASSEMBLY AND METHOD FOR ITS ASSEMBLY

George Fedorovich; Kenneth C. Kirkland, and Jim F. McGraw, all of Longview, Tex., assignors to Garlock, Inc., Palmyra, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,280

Int. Cl.⁴ F16J *15/32*

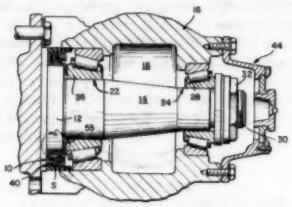
U.S. Cl. 277—1 **16 Claims**

1. A method of assembling a hub seal sleeve onto a cooperating element comprising the steps of:

slip fitting a hub seal sleeve onto a cooperating element of an axle to a location where it is retained on the cooperating element adjacent to but short of a final, operative position of the hub seal sleeve on the cooperating element; and

press fitting the hub seal sleeve onto the cooperating element to an extent requiring a force at least substantially as great as the maximum which can be applied by hand by displacing the hub seal to the final, operative position thereof on

the cooperating element via the sub-steps of assembling a hub on the axle, and tightening an adjusting nut onto the



axle in a manner applying a force which pushes the hub seal sleeve further onto the cooperating element.

4,552,368

BACKUP SEAL WITH BUSH IN FORM OF RADIALLY FLOATING WASHER

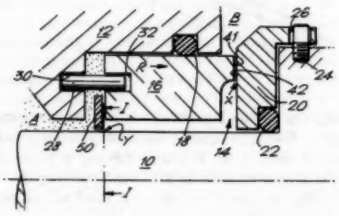
Neil M. Wallace, Stockport, England, assignor to Flexibox Limited, Manchester, England

Filed Nov. 30, 1984, Ser. No. 676,857

Claims priority, application United Kingdom, Dec. 1, 1983, 8332074

Int. Cl.⁴ F16J *15/38*

U.S. Cl. 277—27 **14 Claims**



1. A mechanical seal system for a rotary shaft exiting a housing containing fluid to be retained within the housing, the system comprising:

(a) a main mechanical seal; and

(b) a second, backup seal having:

(i) a stationary seal element sealed in the housing;

(ii) a rotary seal element sealed on the shaft, each seal element being provided with opposing annular seal faces surrounding the shaft and being arranged to be urged toward one another to form a running seal therebetween substantially only by the pressure of any fluid product leaking past the main seal should that seal fail; and,

(iii) a bush in the form of an axially free, radially floating washer disposed on the shaft between the main and backup seals, which bush is a close fit on the shaft and is adapated to form a temporary seal between the shaft and stationary seal element while fluid pressure behind the washer and seal element builds up and closes the backup seal between the rotary and stationary seal elements.

4,552,369

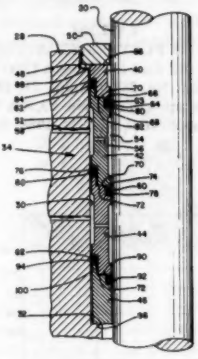
STEM SEALING FOR HIGH PRESSURE VALVE

Vernon G. Stewart, Houston, and Frank C. Adamek, Pasadena, both of Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Dec. 24, 1984, Ser. No. 685,439

Int. Cl.⁴ F16J *15/06*; F16K *41/04*

U.S. Cl. 277—226 **4 Claims**



1. A stem sealing apparatus for a high pressure valve, said valve having a bonnet and a moveable valve stem passing therethrough, comprising;

a bore through the bonnet;

an upwardly facing shoulder toward the lower end of said bore;

a packing gland threadedly connect to said bonnet;

a plurality of loosely stacked cylindrical inserts surrounding said valve stem within said bonnet, and including a upper insert, a lower insert, and a plurality of intermediate inserts;

each of said inserts having an outside diameter less than the diameter of the bore of said bonnet, and an inside diameter greater than the outside diameter of the stem;

each of the intermediate inserts having an exterior annular cavity, an interior annular cavity, said exterior and interior cavities being fluidedly connected to one another, an upper and a lower insert abutting surface for abutting adjacent inserts, the insert abutting surfaces being centrally located with respect to the radial dimension, an upper and a lower seal retaining surface located at both the inboard and outboard radial dimensions;

said upper insert having a lower insert abutting surface for abutting the adjacent insert, and lower seal retaining surfaces located both at the inboard and outboard locations with respect to the radial dimensions;

said lower insert having an upper insert abutting surface for abutting the adjacent insert, and upper seal retaining surfaces located at both the inboard and outboard locations with respect to the radial dimension;

means for injecting and retaining a flowable sealant material into said annular cavities;

a plurality of seal rings including a plurality of inner seal rings located between said adjacent inserts adjacent the inboard seal compressing surfaces and a plurality of outer seal rings located between adjacent inserts adjacent the outboard seal compressing surfaces;

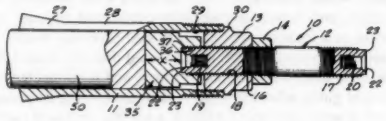
each seal ring including a deformable central seal member and an upper and a lower anti-extrusion ring, each anti-extrusion ring having zero clearance from the adjacent bore or stem;

the thickness of said seal rings in the uncompressed condition being less than the distance between the spaced apart seal compressing surfaces.

4,552,370
SET OF WORKPIECE STOPS FOR WORKPIECE CLAMPING COLLET

Kenneth A. Baumgartner, 858 Glenlyn Dr., Azusa, Calif. 91702

Filed Apr. 11, 1983, Ser. No. 483,658
Int. Cl.[4] B23B *31/20*
U.S. Cl. 279—1 S **8 Claims**

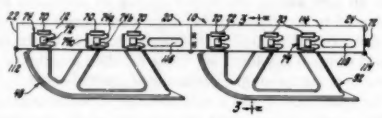


1. In a workpiece clamping collet mountable in a lathe spindle, that improvement which comprises:
a unitary assembly for supporting a selected one of a set of workpiece stops axially of said collet comprising:
an externally threaded master stem;
internally threaded non-adjustable collar means embracing said master stem and having a threaded shank having a shoulder in abutment with the end of said collet for securing said non-adjustable collar means in a predetermined position axially of said collet;
a lock nut mounted on said master stem engagable with said collar means to lock said master stem in a predetermined position axially of said master stem;
threads on the forward end of said master stem adapted to mate with the threads of a workpiece stop;
a plurality of non-adjustable workpiece stops of different dimensions each having threads at one end mateable with the threads at the forward end of said master stem; and
each of said non-adjustable workpiece stops having a fixed stop surface adjacent the threaded end thereof spaced a predetermined axial distance from the other end thereof which said fixed stop surface abuts a stop surface on the forward end of said master stem when mounted thereon whereby said stops can be substituted for one another with the outer end of the substituted stop in a predetermined distance from the forward end of the collet.

4,552,371
SCREWLESS COLLAPSIBLE SLED, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Samuel J. McFrisby, Ecorse, Mich., assignor to Joseph A. Ulicne, Grosse Ile, Mich., a part interest

Continuation-in-part of Ser. No. 304,244, Sep. 21, 1981, abandoned. This application May 19, 1983, Ser. No. 495,985
Int. Cl.[4] B62B *13/16*
U.S. Cl. 280—20 **18 Claims**

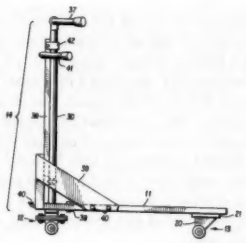


1. A collapsible sled for transporting articles, comprising:
a front section and a rear section, said sections being pivotably interconnected;
one of said sections being pivotal with respect to the other through an arc of approximately 180°;
each said section comprising a box-like member which includes front and rear hinge plates, a support platform, front and rear depending walls, and opposite side walls;
each said section having a pair of snow blade runners pivotably directly connected thereto by hinge means;
each said snow blade runner being pivotal from a position in which it is entirely received within said box-like member to an operable position in which said snow blade runner extends downwardly from and substantially perpendicularly to said platform;
first means comprising a removable hinge pin and said front and rear hinge plates for locking said front and rear sections together in a collapsed condition with said snow blade runners disposed therein;
second means on the outside surface of said side walls for locking said snow blade runners in said operable position;
third means on the inside surface of said front wall of said rear section for locking said front and rear sections in an open operable position; and
each said second and third means comprising a locking member which is slidably received in a keeper member.

4,552,372
SCOOTERBOARD

Daniel T. Jones, 196-18 116th Ave., St. Albans, N.Y. 11414

Continuation-in-part of Ser. No. 343,432, Jan. 28, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,875
Int. Cl.[4] B62K *9/00*
U.S. Cl. 280—87.04 R **6 Claims**



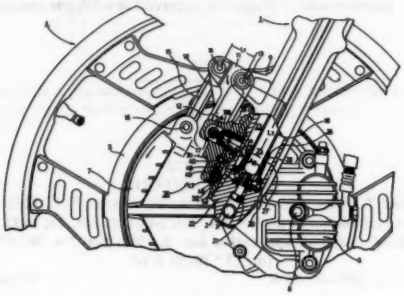
1. A scooterboard including a board having an assembly hole formed in a front end thereof and a rear skate wheel truck fixedly mounted to an underside of said board at a rear end thereof, comprising:
a selectively lockable swivelling assembly operatively associated with said assembly hole;
a front skate wheel truck fixedly secured to said selectively lockable swivelling assembly and positioned on the underside of said board at said front end;
a steering post assembly detachably affixed to said selectively lockable swivelling assembly such that when said selectively lockable swivelling assembly is in an unlocked state said front skate wheel truck is freely swivellable and said steering post assembly cooperates with said selectively lockable swivelling assembly to guidingly swivel said front skate wheel truck;
a steering column assembly detachably and rigidly affixed to said front end of said board such that when said selectively lockable swivelling assembly is in a locked state said front skate wheel truck is prevented from swivelling and said scooterboard is guided by an operator grasping said steering column assembly and alternately exerting a sidewardly force on first and second sides of said board; and
removable locking means operatively associated with said selectively lockable swivelling assembly for selectively cooperating with said selectively lockable swivelling assembly such that said selectively lockable swivelling assembly is positionable in said unlocked state and said locked state.

4,552,373

FRONT WHEEL SUSPENSION SYSTEM FOR MOTORCYCLE OR THE LIKE

Takeshi Kawaguchi, Saitama; Yoshimi Ishikawa, Tokyo, and Taizo Oonishi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 418,664, Sep. 16, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 595,635
Claims priority, application Japan, Sep. 19, 1981, 56-148030
Int. Cl.[4] B60G *17/08;* B62K *25/08*
U.S. Cl. 280—276 7 Claims



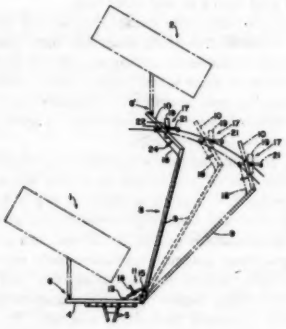
1. In an anti-dive device for the telescopic front fork assembly of a motorcycle or the like, the telescopic front fork assembly including a bottom case having a forward wall fixed to an outer tube telescopically receiving a fork pipe, the bottom case carrying an axle for the front wheel, the improvement comprising, in combination: a contraction regulator fixed on the forward wall and having a main oil passage with a main valve therein, two spaced openings in said forward wall communicating with said main valve in said main oil passage, and a bell crank having a short arm moving in response to braking torque applied to the front wheel and having a long arm operable to close said main valve.

4,552,374

PULLING HITCH ASSEMBLY

David Osterloh, 140 Osterloh Rd., Minster, Ohio 45865

Filed Sep. 9, 1983, Ser. No. 530,863
Int. Cl.[3] B60D *1/14;* A01B *73/00*
U.S. Cl. 280—411 R 13 Claims



1. A pulling hitch assembly for pulling agricultural implements with a tractor or other motorized or even animal-drawn pulling unit, comprising:

a front beam which is adapted to be attached to a pulling unit;

an angle beam which is pivotally attached to said front beam;

pivoting means associated with said front beam and said angle beam for effecting pivoting of said angle beam relative to said front beam;

a guide wheel assembly which includes a tire mounted on a wheel, and which is pivotably connected to said angle beam in a location remote from said pivoting means; and

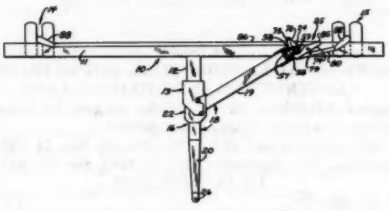
a fixed length cable which is connected directly to said front beam, is guided by said angle beam, and is connected only to said guide wheel assembly; said cable being disposed in such a way, and being of such a length, that said cable is adapted to pivot said guide wheel assembly exclusively relative to said angle beam, when the latter is pivoted relative to said front beam, in such a way that said tire of said guide wheel assembly is pivotable independently of any tractor or pulling unit and is always disposed substantially perpendicular to said front beam irrespective of position and direction of any tractor or pulling unit therewith.

4,552,375

CONVERTIBLE IMPLEMENT FRAME PULLED LENGTHWISE IN THE TRANSPORT POSITION

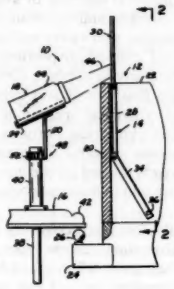
Jon E. Kinzenbaw, Williamsburg, Iowa, assignor to Kinze Manufacturing, Inc., Williamsburg, Iowa

Filed Sep. 22, 1983, Ser. No. 534,965
Int. Cl.[4] B60D *1/14;* B62D *53/04*
U.S. Cl. 280—415 R 12 Claims



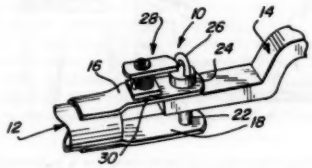
1. In an agricultural implement having an elongated frame and adapted to be converted between a use position in which the frame extends transverse of the direction of travel and a transport position in which said frame is pulled lengthwise, the improvement comprising: an articulated draft member including a forward section and a rear section pivotally connected together; means for mounting the rear end of the rear section to said frame for rotation about a vertical axis and at a location between the transverse center of said frame and one end thereof; and extension means for connecting said draft member to said frame in the use position at a location adjacent the pivotal connection between said forward and rear sections thereof, whereby in the use position, said rear section of said articulated draft member acts as a brace to maintain said frame transverse of the direction of travel of said implement and said forward section of said draft member is generally parallel to the direction of travel of said implement, and in the transport position, said forward and rear sections of said draft member are aligned and extend generally parallel to the direction of elongation of said frame.

4,552,376
TRAILER HITCH LAMP GUIDE
Archie Cofer, P.O. Box 75, Waureka, Okla. 73573
Filed Nov. 16, 1983, Ser. No. 552,523
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 280—477 **5 Claims**



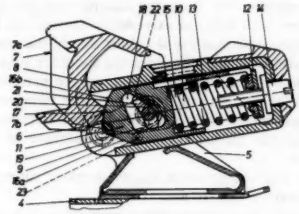
1. A trailer hitch coupling guide enabling the driver of a towing vehicle having a central longitudinal axis, to position the hitch component on the towing vehicle in cooperative coupling relation with the companion hitch component on a forwardly projecting trailer tongue, comprising:
target means including an upright translucent panel mounted on the rearward end portion of the towing vehicle;
signal means including a lamp emitting converging light rays; and,
means supporting said lamp on the trailer tongue for directing the light rays in an upward and forwardly inclined direction in a vertical plane aligned with the central longitudinal axis of the trailer tongue for illuminating predetermined portions of the target means in accordance with the position and proximity of the towing vehicle relative to the companion hitch component.

4,552,377
HITCH PIN SECURING DEVICE
Cornie Folkerts, R.R. #1, Box 127, Inwood, Iowa 51240
Filed Mar. 23, 1984, Ser. No. 592,834
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—515 **7 Claims**



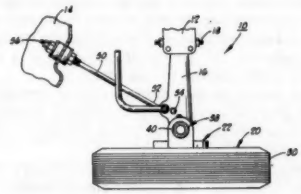
1. A device for locking a hitch pin in a hitch in which the hitch pin extends from a first side through first and second members to connect said members, comprising:
a pivot pin secured to the first side of the first member;
means for defining a shoulder about the pivot pin and spaced from the first side;
a pin retainer plate on the defined shoulder, the plate being pivotable about the pivot pin between a first position clear of the hitch pin and a second position blocking the hitch pin from withdrawal from the first and second members;
means for securing the plate against substantial axial motion on the pin;
a first stop secured to the first member;
a second stop secured to the plate, said first and second stops abutting when the plate is in the second position; and
means for biasing the stops toward abutment from said first position.

4,552,378
SAFETY SKI BINDING
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland
Filed Mar. 2, 1984, Ser. No. 585,723
Claims priority, application Austria, Mar. 11, 1983, 878/83
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—632 **7 Claims**



1. A safety ski binding, in particular a heel holder, comprising a sole holder which is supported on a bearing block for pivotal movement about a swivel axle which extends transversely of the ski and parallel to the upper side of the ski, the sole holder being held in a downhill skiing position by a slide member which cooperates with a control surface on the sole holder and which is guided for movement against the force of a release spring in a spring housing which is supported on the bearing block for pivotal movement about an axis which extends parallel to the axle, the spring housing serving simultaneously as a spring housing and as a release member for effecting a voluntary opening of the sole holder, including a control surface on the slide member, wherein the control surface on the sole holder is a control cam, wherein the swivel axle of the sole holder is offset toward an end of the ski relative to the axis of the spring housing, wherein the slide member in the downhill skiing position engages the control cam of the sole holder in the region between the two axes, and wherein a control recess is provided in the slide member for the swivel axle of the sole holder.

4,552,379
COMPRESSION LINK ADAPTOR ASSEMBLY
Kenneth D. Foster, 7615 Shelby La., Broken Arrow, Okla. 74014
Filed Nov. 25, 1983, Ser. No. 554,985
Int. Cl.[4] B62D *17/00*
U.S. Cl. 280—661 **13 Claims**



1. An improved adjustable compression link assembly for effecting camber and caster settings of a wheel assembly wherein the wheel asembly is connected by a transverse link assembly to a laterally extending cross frame member of a main

frame, the adjustable compression link assembly comprising, in combination:

a compression link rod having a first end portion attachable to the transverse link assembly, a medial portion, and a threaded second end portion having a reduced cross-sectional dimension, the compression link rod further characterized as having a shoulder stop formed between the threaded second end portion and the medial portion thereof;

adaptor sleeve means for interconnecting the threaded second end portion of the compression link rod to the main frame and adjustably establishing the effective length of the compression link rod, the adaptor sleeve means comprising:

an adaptor sleeve having a longitudinal bore extensive therethrough and with an internal shoulder stop engaging portion, the threaded second end portion of the compression link rod extendable through the longitudinal bore such that the shoulder stop of the compression link rod abuttingly engages the shoulder stop engaging portion of the adaptor sleeve and the extremity of the threaded second end portion of the compression link rod protrudes from the longitudinal bore so as to be extendable through a selected aperture in the main frame;

at least one compression spacer member supportable on the adaptor sleeve; and

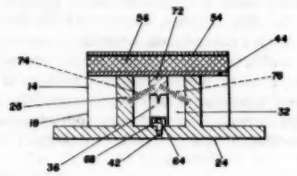
lock means for securing the compression link rod to the main frame such that the compression spacer member and the main frame are grippingly engaged between portions of the lock means.

4,552,380

SELF-CONTAINED CRASH BAG AND INITIATOR

George L. Stevens, Ogden, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Jan. 11, 1984, Ser. No. 569,861
Int. Cl.[4] B60R *21/08*
U.S. Cl. 280—728 **4 Claims**



1. Structure for the inflation of inflatable protective bags for safety systems for vehicles, comprising, in combination:

a cup-shaped member having a substantially flat base and including an annular wall attached to said base, being generally perpendicular thereto, and forming a cylindrical opening therein, said wall having a screw thread formed on the inner surface thereof remote from said base and having at least one channel formed therein extending for substantially the full length of said wall in a direction generally perpendicular to said base,

passageway means in said base providing communication between said channel and said cylindrical opening,

stab primer and booster charge means located in said channel adjacent said base,

inertial firing pin means located in said channel separated from said percussion and booster charge means,

over-center spring means normally holding said firing pin means out of contact with said percussion and booster charge means but operative, when subjected to deceleration in the direction of said base accompanying a crash, to move over center thereby to effect actuation of said firing pin means toward and into contact with said percussion and booster charge means,

cover means for covering the end of said annular wall remote from said base including a first substantially flat plate having an imperforate circumferential edge portion of size sufficient at least to close said channel and having a central portion with peforations therein, said central portion enclosing said cylindrical opening of said wall means to form a reaction chamber and to retain combustible gas generant means therein, said cover means further including first and second cylindrical portions extending substantially perpendicularly in opposite directions from said first plate with said first one of said cylindrical portions extending into said cylindrical opening of said wall means, said first one of said cylindrical portions having external screw threads thereon adapted for mating engagement with the screw threads formed on the inner surface of said opening, and said second cylindrical portion having perforations therein,

a second substantially flat plate covering the end of said second cylindrical portion remote from said first plate, said second plate being imperforate and having a circumferential flange extending beyond the perimeter of said second portion to define, with said second cylindrical portion and said first plate, an annular space,

heat sink screen means provided in said annular space, and

crash bag means having an opening with said opening attached in gas tight relationship with said base, with said cup-shaped member, cover means and said second flat plate extending therein,

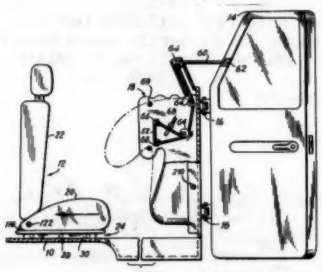
said perforations in said first plate and in said second cylindrical portion providing openings for the outlet flow of generated gases through said heat sink screen means into said crash bag means.

4,552,381

PASSENGER RESTRAINT SAFETY SYSTEM

Samuel L. Schlanger, 140 Cheyenne Way, Wayne, N.J. 07470

Filed Feb. 13, 1984, Ser. No. 579,689
Int. Cl.[4] B60R *21/00*
U.S. Cl. 280—752 **12 Claims**



1. A passenger restraint safety system for a passenger type automobile, said automobile having a chassis, a passenger seat including a frame, and a door hingedly connected to said chassis providing access to said passenger seat, said safety system including:

(a) a guide track system for said passenger seat and frame permitting unrestrained movement of said seat and frame on said guide track system in the longitudinal direction of said chassis;

(b) a safety cushion in front of said passenger seat contoured to the body of a passenger in the seated position to provide a large body contact area having an upper body portion and a leg portion;

(c) locking means for locking said passenger seat and frame in a position at a pre-determined distance from said safety

cushion to allow free and unrestricted movement to a passenger seated thereon;

(d) means for releasing said locking means triggered by a collision of said automobile with another object such that said seat and frame are released for unrestrained free movement on said track system whereby the forward momentum of said passenger and said seat cause said seat to move instantaneously toward said safety cushion to restrain said passenger in a seated position therebetween; and

(e) means for collapsing said safety cushion from a first safety position to a second position farther away from said seat when said door is opened and returning said safety cushion to said first safety position when said door is closed so that a passenger may enter said automobile and be seated therein, said means comprising a plunger located within said safety cushion adapted for movement in a direction away from said seat, means operatively connecting said plunger to the outer fabric of said safety cushion, means for biasing said plunger so that said safety cushion is normally maintained in its first safety position, and means operatively connecting said plunger to said door so that said plunger collapses against said biasing means when said door is opened and is repositioned by said biasing means when said door is closed.

4,552,382

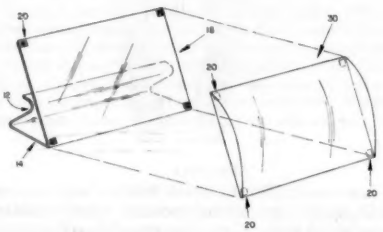
BOOKHOLDER WITH MAGNIFIED VIEWING WINDOW

Mollie G. W. Cowden, 813 Caravan Cir., Austin, Tex. 78746

Filed Jul. 25, 1983, Ser. No. 517,210

Int. Cl.[4] B42D *9/00, 3/00*

U.S. Cl. 281—45 **1 Claim**



1. In a bookholder adapted to hold a book open to a preselected page into flat contact with an integral first viewing window such that substantially all the printed material on the preselected pages is exhibited through the viewing window for reading, the improvement comprising:

(a) A second viewing window of substantially the same dimensions as said first viewing window formed to magnify substantially all the underlying printed material, thereby facilitating readability and means removably mounting said secured window to said first window.

4,552,383

IDENTIFICATION CARD HAVING AN IC MODULE

Joachim Hoppe, and Yahya Haghiri-Tehrani, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

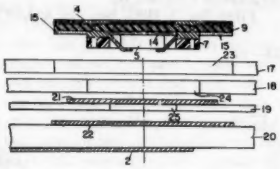
Filed Nov. 4, 1982, Ser. No. 439,218

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151408

Int. Cl.[4] B42D *15/00;* **G06K** *7/06, 19/00*

U.S. Cl. 283—83 **6 Claims**

1. An identification card or similar data carrier incorporating an IC module, said IC module being arranged on a carrier element, said identification card having a plurality of card layers and including a recess in an area in which said carrier element is positioned, at least two of said card layers positioned adjacent to said recess, a supporting layer being attached to



each of said at least two card layers, each supporting layer comprising means for stabilizing the shape of said card layers during hot lamination of said card.

4,552,384

MOLDED-JOINT ASSEMBLY

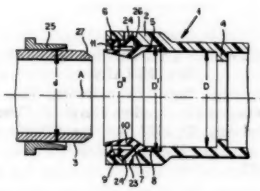
Wilhelm Cyriax, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabriken GmbH, Meinerzhagen, Fed. Rep. of Germany

Division of Ser. No. 269,820, Jun. 3, 1981, Pat. No. 4,410,479, which is a continuation-in-part of Ser. No. 84,196, Oct. 12, 1979, abandoned. This application Mar. 16, 1983, Ser. No. 475,848

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845308; Sep. 6, 1979, 2936016

Int. Cl.[4] F16L *17/02*

U.S. Cl. 285—111 **2 Claims**



2. A joint assembly comprising:

a hard outer member having a cylindrical inner surface and a mouth at one end and formed on said inner surface adjacent said mouth of said member with a cylindrical recess having two portions of different diameter, said outer member being formed with a through going sprue hole opening on said inner surface at said recess, said outer member being further formed axially inwardly of said recess from said mouth with an inwardly extending annular shoulder between said portions of different diameter; and

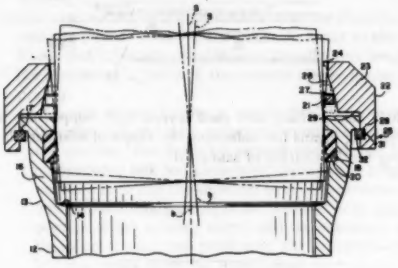
a soft seal adhered to said inner surface at said recess and having an integral sprue extending all the way through said outer member at said sprue hole, said soft seal having a V-cross section with a shank lying in one portion of said recess flush with said inner surface and a pair of arms reaching toward said mouth, one of said arms lying against a wall of the other portion of said recess and having an inwardly converging bevel at said mouth and the other of said arms being spaced from said one of said arms and tapering in cross section toward said mouth.

4,552,385

BOLTLESS RESTRAINED PIPE JOINT

Robert G. Peting, Oak Forest, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 3, 1983, Ser. No. 455,037
Int. Cl.[4] F16L *17/02*
U.S. Cl. 285—111 6 Claims



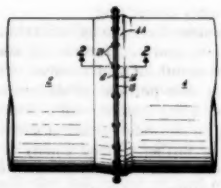
1. A restrained pipe joint comprising,
a bell mouth including an annular lip,
a spigot inserted into said bell mouth,
a compressible sealing gasket disposed about said spigot end and seated within a groove in said bell mouth,
a ring fixed to said spigot,
annular restraining ring means disposed about said spigot and having a concave inner wall engagable with said spigot ring,
said restraining ring means including first holding means engaging said restraining ring for holding said concave surface in engagement with said spigot ring and second holding means underlying said lip on said bell mouth thereby to restrain said spigot and bell mouth against lengthwise separation, at least one of said first or second means comprising a snap ring.

4,552,386

JOINTS BETWEEN CYLINDERS OF DIFFERENT MATERIALS

Herbert L. Burchette, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,344
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—187 8 Claims



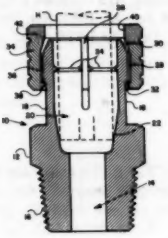
1. A connection between the ends of two coaxial cylindrical members having substantially different thermal coefficients of expansion, one cylindrical member having a first radial annular flange projecting therefrom, said first radial annular flange being spaced a short distance from its end providing a short cylindrical end extension, said second cylindrical member having a second radial annular flange projecting therefrom in the same radial direction, said second cylindrical member having said second radial annular flange located at the end of the second cylindrical member, said end of said cylindrical member having said second radial annular flange extending around and being radially spaced from said short cylindrical extension with the second radial annular flange abutting said first radial annular flange, said circumference of one of said radial annular flanges having radial projections, a torque and spacer means connected to said other radial annular flange adjacent the circumference of said one of said radial annular flanges and having contact with said radial projections to prevent a rotating movement of one of said cylindrical members with respect to the other cylindrical member, an axial load means connected to said other radial annular flange through said torque and spacer means to prevent axial flange separation between said first radial annular flange and said second radial annular flange and permit thermal growth therebetween, an annular resilient strain pad positioned between said short cylindrical extension and said other cylindrical member radially spaced therefrom to absorb radial growth and maintain said two cylindrical members concentric.

4,552,387

COUPLING FOR PRESSURE HOSE

Gerhard S. E. Schmidt, 208 Duplex Ave., Toronto, Ontario, Canada (M5P 2B2)

Continuation-in-part of Ser. No. 367,782, Apr. 12, 1982, abandoned. This application May 23, 1983, Ser. No. 497,074
Int. Cl.[4] F16L *33/00*
U.S. Cl. 285—238 11 Claims



1. A hose coupling for attachment to a hose and comprising;
hose clamping fingers having inner ends rooted to said body portion, and having outer ends from said body portion, the body portion and the fingers being formed as a single integral one piece unit;
ridge means around the exterior of said fingers adjacent said outer ends, said fingers defining a reduced cross-section from said ridge means to said inner ends;
slidable collar means having inner and outer ends fitting captively around said fingers, and being slidable along said fingers relative to said ridge means;
an interior annular wedging portion around the interior of said collar adjacent said outer end for co-operating with said ridge means so as to squeeze said fingers together when the collar means is slid towards said body portion, and releasing said fingers when the collar means is slid away from said body portion;
collar retaining means on the inner end of said collar means for engaging said fingers and retaining said collar means thereon said collar means defining an intermediate portion between said inner end, and said wedging portion, of an enlarged diameter to fit loosely over said ridge means on said fingers;
interior tooth means on said fingers arranged and located so as to engage the outer surface of said hose, and to bite into it, when said fingers are squeezed together by said wedging portions of collar means, and
interior sealing sleeve means of gradually reducing diameter for making sealing engagement with the outer surface of said hose.

4,552,388

CORNER ANGLE ASSEMBLY

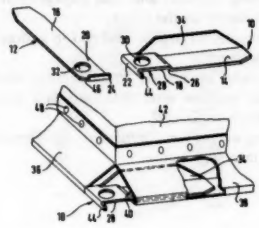
Manfred Meinig, Rietheim-Weilheim, Fed. Rep. of Germany, assignor to Karl Meinig KG, Rietheim-Weilheim, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,312

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340503

Int. Cl.⁴ F16L *23/00*

U.S. Cl. 285—363 **8 Claims**



1. In a corner angle assembly, wherein two separate pieces have respective legs adapted to be inserted into openings formed in respective supporting flanges, wherein the flanges are attached to respective metal duct segments, wherein the pieces have respective contact areas overlapping one another and are provided with aligned screw-holes, and wherein each of the contact areas has a perpendicularly bent end edge portion, the improvement wherein the leg and contact area of the second piece are substantially in the same plane, wherein the contact area of the first piece is substantially parallel but off-set in one direction from the leg of the first piece, and wherein the respective perpendicularly bent edge portion of the first piece extends in a direction opposite said one direction and cooperates with the respective off-set contact area of the first piece to form a guide groove for insertion of the second piece therein.

4,552,389

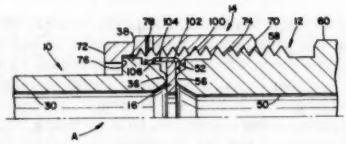
FLUID COUPLING

Gerald A. Babuder, Mentor, and Jeffrey L. Weigl, Cleveland, both of Ohio, assignors to Cajon Company, Macedonia, Ohio

Filed Aug. 23, 1982, Ser. No. 410,408

Int. Cl.⁴ F16L *19/00*

U.S. Cl. 285—379 **21 Claims**



1. In a fluid coupling of the type having first and second generally cylindrical coupling components including fluid passageways extending longitudinally thereof, said components having opposed radial end faces including generally annular sealing beads extending axially therefrom toward each other with an annular sealing gasket interposed therebetween, said coupling further including means for moving said components into a close-spaced substantially coaxial relationship such that said sealing beads sealingly engage opposite face areas of said gasket, the improvement comprising:

a retainer device for maintaining said gasket in a predetermined located position relative to the end face of one of said components in a substantially coaxial relationship therewith, said retainer including an annular end wall and a plurality of retaining legs extending outwardly of said end wall in a direction generally normal thereto in a retaining relationship with said one component and an area thereof spaced axially rearward from the associated radial end face, said retaining legs and said end wall defining a cavity which captures said gasket for preventing radial movement thereof relative to said one component end face such that said gasket is positively located intermediate the annular end wall of said retainer and the sealing bead at said one component end face, said annular end wall having an inside diameter greater than the outside diameter of the annular sealing bead on the end face of the other of said components and less than the outer diameter of said gasket, whereby said gasket is positively located in a generally coaxial relationship with said components when they are moved toward said closely spaced relationship by said moving means, said sealing beads each engaging substantially the same portion of the associated gasket face area during subsequent disassembly and reassembly of the coupling.

4,552,390

CLAMP FITTING FOR PIPES

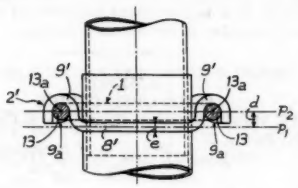
Lionel Calmettes, Ozoir-la-Ferriere, France, assignor to Etablissements Caillau, Boulogne-Billancourt, France

Filed Dec. 8, 1983, Ser. No. 559,217

Claims priority, application France, Nov. 17, 1982, 82 19254

Int. Cl.⁴ F16L *21/06*; B65D *63/00*

U.S. Cl. 285—420 **2 Claims**



1. In a clamp fitting for pipes, particularly for exhaust pipes of automobile vehicles, comprising a staple in the form of a stirrup with divergent arms, stops being provided towards the ends of the arms of this staple, at least one of these stops being constituted by a nut screwed on a thread of the arm of the staple, and a strap presenting a median part of incurved form, provided towards its ends with laterally open forks and abutting on the end stops of the arms of the staple,

the plane (P_1) perpendicular to the axis of the fitting and passing through the centre of gravity of the incurved median part of the strap is offset with respect to the plane (P_2) defined by the axes of the arms of the staple when they occupy their normal position, at the moment of clamping, in the forks provided at the ends of the strap, the offset of said plane (P_1) with respect to said plane (P_2) being oriented in the same direction as that from the bottom of the forks towards their lateral opening.

4,552,391

PORTABLE ENCLOSURE WITH COMBINED LATCH AND SUPPORT SYSTEM

Larry V. Moore, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 11, 1982, Ser. No. 338,761

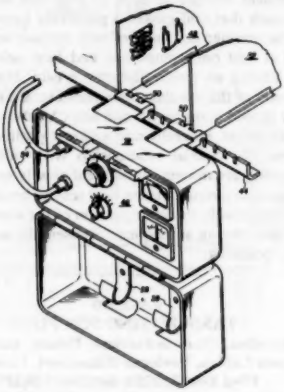
Int. Cl.⁴ E05C *5/00*

U.S. Cl. 292—5 **11 Claims**

1. In a portable enclosure for holding equipment on a fixed structure, a combination latch and support system comprising:

a bracket member retained in the enclosure and movable through an aperture in the enclosure to an extended position and movable back through said aperture to a re-

tracted position, said bracket member including means for attaching to said fixed structure, said means being in a non-attaching arrangement when said bracket member is in said retracted position, and said means becoming ar-



ranged for said attaching by said bracket member moving to said extended position; and

means for latching the enclosure closed when the bracket member is in said retracted position and unlatching the enclosure when in the extended position.

4,552,392

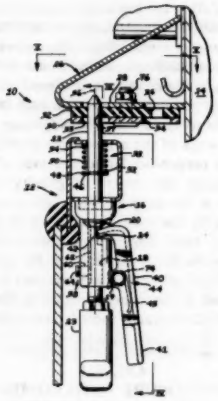
HOLD OPEN DEVICE

Michael E. Morello, Sandwich, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 27, 1984, Ser. No. 574,321

Int. Cl.[4] E05C *1/04*

U.S. Cl. 292—181 **6 Claims**



1. An apparatus connectable to a pivotally movable partition for selectively locking the partition in an open position, said partition being pivotally connected to a foundation member, the apparatus comprising:

a body having first and second intersecting passages and being connectable to said partition;

a rod reciprocatably disposed in said first passage and movable between a first, unlocked position and a second, locked position, said rod having a diameter and a recess extending radially into said rod, said recess being alignable with said second passage at the second position of said rod;

a bracket having a mounting element joinable to the foundation member, an engagement plate, and a resilient member disposed between said mounting element and said engagement plate, said engagement plate and said resilient member each having a first opening at least as large as and smaller than said diameter of said rod, respectively, said openings being generally coaxially arranged for reception of one end of said rod at the second position of said rod, said mounting element and said engagement plate being fixed one relative to the other;

first biasing means for urging said rod in a direction toward said first position;

a lever pivotally connected to said body and having an engagement portion insertable into said recess through said second passage; and

second biasing means for urging said engagement portion of said lever into said recess.

4,552,393

DOOR LATCH MECHANISM

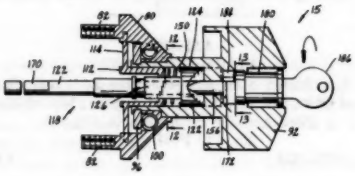
George Wartian, East Detroit, Mich., assignor to Wartian Lock Co., St. Clair Shores, Mich.

Continuation of Ser. No. 494,501, May 13, 1983, abandoned.

This application May 8, 1985, Ser. No. 731,761

Int. Cl.[4] E05C *3/22*

U.S. Cl. 292—221 **7 Claims**



1. A door latch mechanism comprising a latch, means for mounting said latch on a door for movement to and from an operative position in which it is adapted to engage a keeper to maintain the door closed, a housing, a pusher assembly comprising a plunger mounted in said housing for reciprocation, a push rod between said plunger and latch extending lengthwise in the direction of plunger movement and having one end abutting said plunger, the other end of said push rod being operable to move said latch away from its operative position in response to longitudinal movement of said push rod in one direction, a rotatable member, cam means between said rotatable member and plunger for moving said plunger and hence said push rod in said one direction in response to rotation of said rotatable member to move said latch away from its operative position, said cam means comprising confronting contoured surfaces on said pusher assembly and rotatable member, spring means urging said plunger in a direction opposite said one direction, said push rod being rotatable between a first position and a second position, means for rotating said push rod, and means for locking said latch in its operative position in response to rotation of said push rod from its first to its second position.

4,552,394

TAMPER INDICATOR

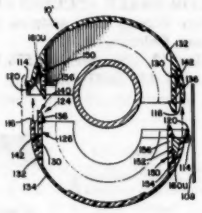
David A. Kesselman, 16685 Arnold Dr., Sonoma, Calif. 95476

Continuation of Ser. No. 434,550, Oct. 15, 1982, Pat. No. 4,426,108, which is a continuation of Ser. No. 274,483, Jun. 17, 1981, Pat. No. 4,372,593. This application Nov. 10, 1983, Ser. No. 550,546

The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.

Int. Cl.[4] B65D *55/02*

U.S. Cl. 292—307 B **18 Claims**



9. A seal for providing an indication of tampering with a connection nut enclosed thereby comprising:

first and second separate, unconnected, interlockable collar portions for forming a collar for surrounding a connection nut,

each of said first and second collar portions including an outer wall having an inner and an outer surface, first and second walls formed integrally with said outer wall and extending in substantially parallel spaced relationship therefrom, said first and second walls extending substantially normal to said outer wall and each terminating at an inner edge, the inner edges of the first and second walls of said first collar portion cooperating with the inner edges of the first and second walls respectively of said second collar portion to define enclosed openings in said collar when said first and second collar portions are interlocked, said outer wall and first and second walls terminating at first and second spaced end edges, said first end edge being in a plane which is spaced outwardly beyond the plane of said second end edge, the first end edge of each of said first and second collar portions abutting the second end edge of the other collar portion when the first and second collar portions are interlocked, a cuff located adjacent the second end edge and being formed integrally with said outer and first and second walls to extend completely around and outwardly of said second end edge, said cuff extending from said outer and first and second walls beyond said second end edge for a distance which is at least equal to the distance between the planes of said first and second end edges so that the cuff will extend over the abutting first and second end edges of said first and second collar portions when the first and second collar portions are interlocked, and first and second spaced fastening means on each of said first and second collar portions with the first fastening means of each collar portion being adapted to engage and interlock with the second fastening means of the remaining collar portion at a location spaced inwardly from the first and second walls and the inner surface of the outer walls of said first and second collar portions to form said collar, said first fastening means including a first member affixed at a base end thereof to the inner surface of said outer wall at a location spaced from but adjacent to said first end edge, said first member having a free end opposite to said base end thereof which is spaced inwardly from the inner surface of said outer wall and which extends to and terminates at a terminal edge spaced outwardly beyond the plane of said first end edge, the free end of said first member being provided with a first catch means on the portion thereof which extends outwardly beyond the plane of said first end edge, and said second fastening means including a second member affixed at a base end thereof to the inner surface of said outer wall at a location spaced from but adjacent to said second end edge, said second member having a free end opposite to said base end thereof which is spaced inwardly from the inner surface of said outer wall and which extends to and terminates at a terminal edge spaced outwardly beyond the plane of said second end edge but positioned within the confines of said cuff, the free end of said second member being provided with a second catch means for engaging and interlocking with the first catch means of an adjoining collar portion when said first and second collar portions are interlocked, the free end of one of said first and second members being spaced from the inner surface of said outer wall a greater distance than the free end of the remaining member, said first and second members and said first and second catch means being located and formed so that said first catch means of a first of said collar portions will engage the second catch means of a second said collar portions during but prior to the interlocking thereof to cause relative flexure between the free ends of said first and second members, said first fastening means including a single reinforcing rib extending between the inner surface of said outer wall and said first member, said single reinforcing rib being secured to said first member substantially below said first end edge, said second fastening means including at least two spaced reinforcing ribs extending between the inner surface of said outer wall and said second member.

4,552,395

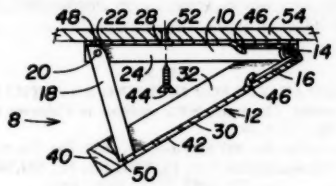
COLLAPSIBLE WEDGE FOR SLIDING DOORS AND WINDOWS

Edward J. Dominguez, 503 Park Ave., San Jose, Calif. 95110

Continuation of Ser. No. 297,245, Aug. 28, 1981, abandoned. This application Mar. 25, 1985, Ser. No. 715,763

Int. Cl.[4] E05C *17/44, 17/54*

U.S. Cl. 292—342 **9 Claims**



1. A collapsible wedge assembly for sliding doors and windows provided with a sliding closure and an upper track for guiding the closure, said collapsible wedge assembly comprising:

an elongated base adapted to be attached to the upper track;

a first pivot means;

at least a first elongated wedging member attached to said elongated base by said first pivot means for pivoted movement towards said elongated base to a closed position and away from said elongated base to an open closure-wedging position, wherein said elongated wedging member is urged toward a closed position by a force tending to open the closure, and exerts a downwardly directed force on the sliding closure;

at least a first torsion spring means mounted on said first pivot means and continuously urging said elongated wedging member from said open position toward said closed position;

second pivot means; and,

at least a first prop member attached to said elongated base by said second pivot means and normally biased by the

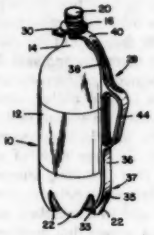
force of gravity away from said elongated base to an overcenter position when said elongated wedging member is moved to open, closure-wedging position, to prop said elongated wedging member in said open, closure-wedging position, and to resist movement of said wedging member to a closed position by said spring means.

4,552,396

BOTTLE HANDLE FOR PLASTIC PRONG BOTTLE

John M. Rais, 520 Westport Ave., Norwalk, Conn. 06851

Filed Oct. 29, 1984, Ser. No. 665,948
Int. Cl.[4] B65D *23/10*
U.S. Cl. 294—27.1 7 Claims



1. A reusable handle adapted to be secured to a bottle having an annular side wall terminating in a neck at one end and a bottom formed from a plurality of spaced support prongs at its opposite end, said handle comprising:

a rigid, arcuate looped first portion at one end of said handle having a substantially diamond-shaped opening adapted to be inserted about a support prong of a bottle,

a substantially horizontal hook-like second end portion at the opposite end of said handle adapted to encompass the neck of a bottle, and

an intermediate strap-like portion joining said hook-like second end portion with said looped first end portion,

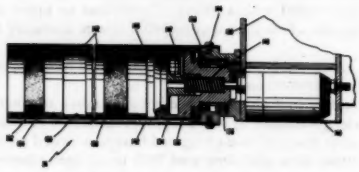
said intermediate strap-like portion including a finger gripping substantially vertical loop intermediate the ends thereof.

4,552,397

APPARATUS FOR GRIPPING AN ARTICLE

Peter Conrad, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 387,645, Jun. 11, 1982, Pat. No. 4,427,158.
This application Nov. 14, 1983, Ser. No. 551,781
Int. Cl.[4] B25J *15/00;* B66C *1/44*
U.S. Cl. 294—86.4 1 Claim



1. Apparatus for gripping an article comprising:

a hollow arm having resiliently swingable flexible bristle projections extending into a center bore of said arm, inner ends of said swingable projections defining an aperture having a cross-section smaller than the article to be gripped,

means for telescopingly inserting said arm onto the article while simultaneously rotating said arm about its longitudinal axis relative to the article such that said inner ends of said projections swing generally tangentially in response to engagement with an outer periphery of the article,

brake means for holding the article against rotation during insertion of said arm thereonto, and

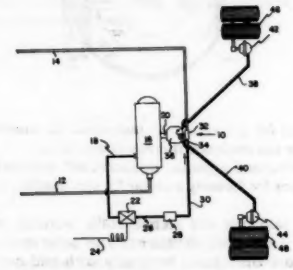
means for rotating said arm in the opposite direction to deactivate said brake means.

4,552,398

TRACTOR-TRAILOR BRAKE ACCELERATION SYSTEM

John R. Risley, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 12, 1984, Ser. No. 570,135
Int. Cl.[4] B60T *15/46*
U.S. Cl. 303—7 2 Claims



1. In a pneumatic trailer brake system of the type actuated by a pneumatic signal from the brake system of an associated tractor, said trailer brake system including pneumatically actuable brakes on the trailer, an air reservoir, a pneumatic relay valve connected to the reservoir and having at least one service outlet connected to said trailer brakes and a control inlet pneumatically connected with said tractor to receive said pneumatic signal therefrom, the improvement comprising:

an electrically actuated valve pneumatically connected to said reservoir and electrically connected with said tractor for actuation upon actuation of said tractor brake system;

a pressure reducing valve pneumatically connected in series with said electrically actuated valve and having an outlet pressure substantially less than said pneumatic signal from said tractor; and

a shuttle valve having a first input port pneumatically connected with said tractor brake system to relieve said pneumatic signal, a second input port pneumatically connected to the outlet pressure of said pressure reducing valve, and an outlet port connected to said control inlet of said relay valve, said shuttle valve providing exclusive pneumatic communication between the input port thereof experiencing higher pressure and said relay valve.

4,552,399

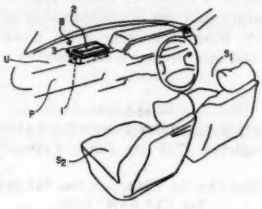
GLOVE BOX ON VEHICULAR INSTRUMENT PANEL

Kazuya Atarashi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,479
Claims priority, application Japan, Jun. 22, 1983, 58-94980[U]
Int. Cl.[4] B60R *7/06*
U.S. Cl. 296—37.12 13 Claims

1. A glove box for the upper surface of a vehicle dashboard, comprising, means for mounting on the dashboard upper sur-

face and having pocket for receiving articles, a lid means for covering said pocket and movable forward to open said



pocket, means for engaging said lid means and preventing said forward movement upon deceleration of the vehicle.

4,552,400

TWO-DOOR TYPE AUTOMOBILE BODY STRUCTURE

Hayathugu Harasaki, and Osamu Matsuura, both of Hiroshima, Japan, assignors to Mazda Motor Company, Hiroshima, Japan

Continuation of Ser. No. 404,838, Aug. 3, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,315

Claims priority, application Japan, Aug. 4, 1981, 56-122209; Aug. 7, 1981, 56-123815

Int. Cl.⁴ B62D *25/00, 23/00*

U.S. Cl. 296—185 **6 Claims**

1. A body structure for a two-door type automobile including roof rail means extending along each side of a roof panel, side sill means extending along each side of a floor panel, center pillar means comprising a pillar inner and a pillar outer which are connected together to form a structure of a closed cross-section, said center pillar means having an upper end connected with said roof rail means and extending substantially downwardly therefrom, a rear fender panel having a substantially vertically extending front edge portion which is bent transversely inwardly of the body structure to form a stepped configuration complementary to a rear edge configuration of a side door adapted to be mounted on said body structure, an inner panel having a front edge secured to said front edge portion of the rear fender panel and extending rearwardly from said front edge with a space with respect to said rear fender panel and then bent transversely outwardly toward said rear fender panel, said inner panel further having a rear edge also secured to said rear fender panel at a portion which is covered by a rear edge portion of the side door to form a lower pillar means of closed cross-section, said lower pillar means being connected at a lower end with said side sill means, said inner panel of the lower pillar means being connected with the pillar inner of the center pillar means and said rear fender panel being connected with the pillar outer of the center pillar means so that the closed cross-section of the lower pillar means is contiguous with the closed cross-section of the center pillar means.

4,552,401

FOLDING ROOF FOR VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES

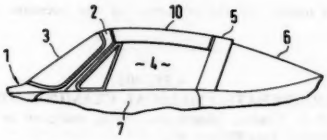
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,704

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147214

Int. Cl.⁴ B60J *7/14, 7/18*

U.S. Cl. 296—219 **19 Claims**



1. A folding roof for vehicles, bridging a passenger space by extending between a windshield frame and a roll-bar, said folding roof comprising a roof covering means, laterally disposed longitudinally extending girder means for defining the lateral edges of the folding roof, and a plurality of strut means arranged between the longitudinally extending girder means extending substantially parallel to said girder means and a longitudinal center plane of the vehicle for supporting the covering means, said covering means interconnecting the longitudinally extending girder means and the strut means, said strut means including alternately disposed form-rigid strut means and elastic strut means disposed such that unsupported sections of the covering means remain between the strut means.

4,552,402

INSTALLATION FOR THE SUPPLY OF SEVERAL SIMILAR ELEMENTS WITH A MEDIUM UNDER ATMOSPHERIC EXCESS PRESSURE

Guntram Huber, Dachtel; Hermann Möller, Aidlingen; Eberhard Faust, Stuttgart; Rüdolf Andres, Sindelfingen, and Wolfram Qüllmalz, Ehningen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 435,957

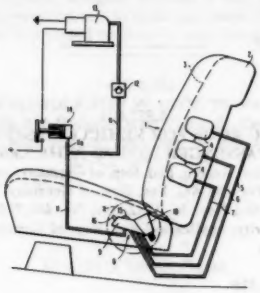
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142833

Int. Cl.⁴ A47C *3/00;* **B60N** *1/00*

U.S. Cl. 297—284 **16 Claims**

1. An installation for the supply of several similar elements with a pressure medium under atmospheric excess pressure for the control of different air chambers of a backrest of a motor vehicle seat, comprising a valve means and a distribution means series-connected with said valve means, said distribution means having outlets adapted to be connected with the similar elements, characterized in that the valve means is constructed as pressure modulator means and in that the pressure modulator means is operable to be selectively connected with at least

one of said elements by said distribution means, and wherein the installation includes a structural unit coordinated to a



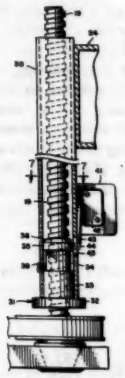
bracket means for the actuation of the pressure modulator means.

4,552,403

POWER-OPERATED MEDICAL EXAMINATION TABLE

Leonard J. Yindra, Manitowoc, Wis., assignor to Hamilton Industries, Two Rivers, Wis.

Filed Sep. 29, 1983, Ser. No. 537,340
Int. Cl.⁴ A47C *3/24*
U.S. Cl. 297—330 **7 Claims**



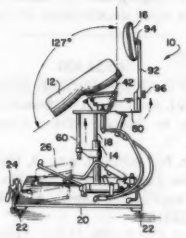
1. A power-operated medical examination table having a base, an extensible/retractable column mounted upon said base, a top supported by said column, and means for extending and retracting said column to raise and lower said top; said means including a load-bearing member disposed beneath said top and normally supporting the same; power drive means for selectively raising and lowering said load-bearing member; said load-bearing member being separable from said top when said power drive means is operated to lower said load-bearing member at the same time that an obstructive force prevents lowering of said top; and sensing means for sensing such separation of said load-bearing means from said top and for interrupting operation of said power means; said top including an inner section mounted upon said column and at least one outer section hingedly connected to said inner section along a horizontal hinge line; second power means for pivoting said outer section between lowered and raised positions; said second power means including a second load-bearing member; second power drive means provided on one of said hinged sections for urging said load-bearing member towards and away from said one of said hinged sections; stop means provided by the other of said hinged sections normally engaging and supporting said second load-bearing member, whereby movement of said second load-bearing member by said second power means causes pivotal movement of said outer section relative to said inner section; said stop means and said second load-bearing member being separable from each other when downward pivotal movement of said outer section is restrained by an obstruction.

4,552,404

NEUTRAL BODY POSTURE CHAIR

Jerome J. Congleton, 2728 San Felipe, College Station, Tex. 77840

Filed Oct. 12, 1983, Ser. No. 541,093
Int. Cl.⁴ A47C *1/02*
U.S. Cl. 297—330 **14 Claims**



1. A chair adapted to support a user in a neutral body posture position; said position defined as the position the body assumes during weightlessness wherein the torso of the body and upper legs form an angle with respect to each other within a range of 100–140 degrees, and the upper legs and the lower legs form a second angle with respect to each other within the range of 100–140 degrees; comprising: a base; a vertical support means; a seat attached to said vertical support means; said seat having a back portion and a front portion; said front portion being downwardly inclined from said back portion at a neutral body posture position angle between 100–140 degrees with respect to the vertical axis of said chair; said back portion of said seat forming a contoured bowl having lower supporting surfaces and raised sides adapted for reception and support of the buttocks of a user; said front portion of said seat forming semi-cylindrical leg troughs extending forwardly of said contoured bowl, said troughs having lower supporting surfaces and raised sides conforming to and being adapted for reception and support of the upper legs of a user; and an elevated weight-bearing pommel positioned between said leg troughs and raised above said lower supporting surfaces of said contoured bowls; the forward end of said pommel and the forward end of said leg troughs being in substantially the same plane; said weight-bearing pommel supporting the weight of the user at the pubis bone maintaining the user at an inclined neutral body position angle within said seat.

4,552,405

SUPPORT FOR SEAT ADJUSTING DEVICE

John W. Wiers, Romeo, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 6, 1983, Ser. No. 539,442
Int. Cl.⁴ A47C *1/027*
U.S. Cl. 297—375 **7 Claims**

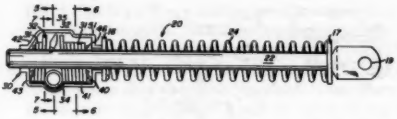
1. A seat adjusting device including a rod secured to one part of the seat and axially movable relative to a locking mechanism for selective locking engagement at different positions on said rod comprising:

a fulcrum pivotally mounted on a fulcrum support and having an axis normal to the axis of said rod, a plurality of

lockwashers slidably mounted to said rod with at least one washer on each side of said fulcrum,

means biasing said washers about said fulcrum to engage said rod,

manually actuable means for moving said lockwashers against said biasing means to release said engagement,



a housing substantially enclosing said lockwashers, said fulcrum, said biasing means and said means for moving said lockwashers, and

said fulcrum support extending through an opening in said housing and projecting out of said housing and fixed to another part of said seat whereby the load applied to said lockwashers and said fulcrum is transferred to said other part of said seat independently of said housing.

4,552,406

CHAIR

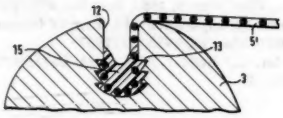
Herbert Ohl, Darmstadt, Fed. Rep. of Germany, assignor to Wilkhahn Wikening & Hahne GmbH & Co., Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,925

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207352

Int. Cl.⁴ A47C *1/12*

U.S. Cl. 297—445 **54 Claims**



1. A chair comprising a first frame means for forming a seat portion, a second frame means for forming a backrest portion, and a substantially flat flexible means adapted to be disposed on said first and second frame means, longitudinally extending groove means formed in each frame for accommodating egdes of said flexible means, means formed in said groove means for enabling a securing of the edges of said flexible means in said groove means including a plurality of undercut means provided in wall areas of the groove means for forming barbs for enabling a securing of said flexible means in said groove means, and a squeezable soft metal member adapted to be pressed into the groove means with the edges of said flexible means whereby said flexible means is tightly secured to said respective frame means.

4,552,407

SEATBELT CLAMP

Juichiro Takada, 12-1, 3-chome Setagayaku, Tokyo, Japan

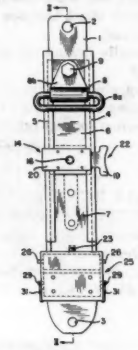
Filed Jul. 13, 1983, Ser. No. 513,173

Claims priority, application Japan, Jul. 20, 1982, 57-108753[U]

Int. Cl.⁴ A62B *35/00;* **B60R** *21/10*

U.S. Cl. 297—476 **6 Claims**

1. A clamping device for clamping a seatbelt of a passive restraint belt system comprising an elongated base plate affixed to a vehicle body and having a case at a lower end thereof, an elongated operating member slidably mounted lengthwise of the base plate and having a belt guide means affixed adjacent an upper end thereof and a cam means affixed at a lower end thereof, a movable clamping jaw in the case having a surface engageable with the cam means, a fixed clamping jaw arranged on a wall of the case opposite to the movable clamping jaw, the seatbelt passing through a space defined between the movable jaw and the fixed jaw, and wrapping at least partway around the belt guide means and a spring biasing the operating member and its cam away from the movable clamping jaw toward a non-clamping position, whereby when a predetermined force



is exerted on the seatbelt, the biasing force of the spring is overcome and the operating member is moved toward a clamping position to cause the cam to engage the movable clamping jaw, thereby forcing the movable clamping jaw against the fixed clamping jaw, to clamp the seatbelt between the fixed and the movable clamping jaws.

4,552,408

ADJUSTABLE ANCHOR MOUNTING DEVICE

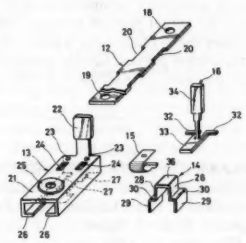
Katsuyasu Ono, Kanagawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Sep. 15, 1983, Ser. No. 532,406

Claims priority, application Japan, Sep. 24, 1982, 57-144423[U]

Int. Cl.⁴ A62B *35/02;* **B60R** *21/10*

U.S. Cl. 297—483 **9 Claims**



1. An adjustable anchor mounting device comprising:

a substantially planar base to be mounted fixedly on a vehicle body and having a plurality of interlocking means provided in pairs spacedly along the direction of displacement of an anchor;

a slide member guided along the base, carrying the anchor thereon, having substantially a lip-groove shape and including a front wall, a pair of side walls extending rearward from the front wall and a pair of rear walls extending inwardly from the respective side walls, whereby surrounding the base;

a latch piece supported on the slide member in such a way that the latch piece is slidable between a first position where the latch piece is in engagement with either one of

the interlocking means and a second position where the latch piece is out of engagement with any of the interlocking means, said latch piece being formed of a plate-like member, being engageable with either one of the interlocking means, having a pair of leg portions received respectively in attachment slots formed through the front wall and guide portions formed in the rear walls and a top portion connecting the leg portions together, and being formed substantially into a U-shape as seen in a transverse cross-section thereof;

biasing means normally urging the latch piece toward the first position; and

release means engageable with the top portion of the latch piece and permitting the shifting of the latch piece to the second position when moved relative to the latch piece.

4,552,409

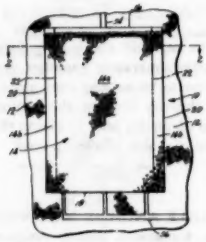
IN SITU OIL SHALE RETORT WITH CONTROLLED PERMEABILITY FOR UNIFORM FLOW

Rex T. Ellington, Norman, Okla., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 19, 1984, Ser. No. 590,711

Int. Cl.⁴ E21B *43/247;* **E21C** *41/10;* **C10B** *57/20*

U.S. Cl. 299—2 **4 Claims**



1. An in situ oil shale retort in a subterranean formation containing oil shale, the in situ retort containing a fragmented permeable mass of formation particles within top, bottom, and side boundaries of unfragmented formation, the fragmented permeable mass having a vertically extending center portion and a vertically extending perimeter portion surrounding the center portion, the center portion having a lower average void fraction (e_1) than the average void fraction (e_2) of the perimeter portion, the center portion having a larger average particle size (d_1) than the average particle size (d_2) of the perimeter portion.

4,552,410

BRAKING SYSTEMS FOR RAILWAY

David J. Wickham; Raymond A. S. Wilkins, both of Chippenham, and Edmund J. Page, London, all of England, assignors to Westinghouse Brake & Signal Co., Wiltshire, England

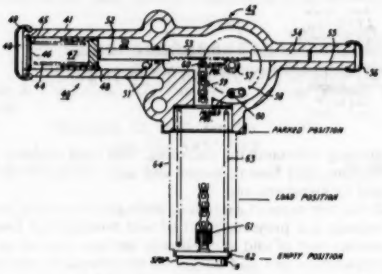
Filed Oct. 17, 1983, Ser. No. 542,536

Claims priority, application United Kingdom, Nov. 6, 1982, 8231753; Nov. 15, 1982, 8232604

Int. Cl.⁴ B60T *8/20*

U.S. Cl. 303—23 R **6 Claims**

1. A braking system for a railway vehicle having a body carried by a sprung bogie, the system including an empty-load valve operable by empty-load measuring means carried by one of the body and the bogie of the vehicle and a stop carried by the other of the body and the bogie, the measuring means including a piston-and-cylinder arrangement extended by pressurization of the arrangement upon the making of a brake application to bring an arresting member into engagement with the stop, a pinion drivingly connected to the arresting member, a rack operatively connected to said piston-and-cylinder arrangement, and drivingly engaged with said pinion such that extension of the piston-and-cylinder arrangement, as transmitted through the rack, rotates the pinion to allow the arresting member to move into engagement with the stop and thereby determine the permitted degree of rotation of the pinion, the empty-load valve being operable in accordance with the permitted degree of rotation of the pinion either to permit a higher



level of brake application upon lesser movement of the arresting member before the arresting member engages the stop or a lower level of brake application upon greater movement of the arresting member before the arresting member engages the stop.

4,552,411

PULSATING BRAKE ACCELERATOR FOR RAIL VEHICLE AIR BRAKE

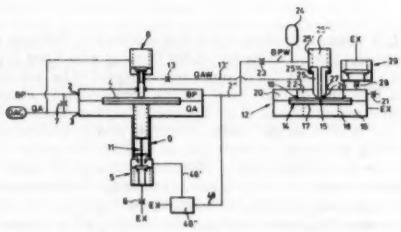
Josef Hintner, Türkheim, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,318

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3232047; Mar. 25, 1983, 3311037

Int. Cl.⁴ B60T *17/04, 15/38;* **B61H** *9/00*

U.S. Cl. 303—37 **13 Claims**



4. Pulsating brake accelerator (4, 8, 12) for an indirectly operating air brake for rail vehicles, operating at any braking level of a service brake application (control braking) and having a first inlet opening (2) for brake line signals and a second inlet opening (3) for reference pressure signals, said reference pressure signals originating in a control chamber (QAC) which is connected with a brake pipe (BP) via a filling nozzle (7), said brake accelerator (4, 8, 12) having a control organ (4) that reacts to pressure differences between the pressure signals at said first and second inlet openings (2, 3), a control element (4) controlling a first valve device (8) for the operation of a pulsator (12) which releases repeated air pulses from said brake pipe to atmosphere during every braking level, said first valve device (8) being connected to said control chamber (QAC) and via a first nozzle (13), to said pulsator, wherein:

(a) said pulsator (12) is connected to said brake pipe (BP) via a second nozzle (23);

(b) said pulsator (12) forms a mixed pressure from a first

derived pressure (QAW) and a second derived pressure (BPW), said first pressure (QAW) being derived from the pressure in said control chamber (QAC) via said first nozzle (13) and said second pressure being derived from the pressure in said brake pipe (BP) via said second nozzle (23);

(c) said pulsator releases mixed pressure impulses (BPW/QAW) at every braking level to atmosphere, while at the same time the brake pipe pressure and the control chamber pressure are reduced via said pulsator (12);

(d) said control element (4) also functions as an emergency brake piston and forms an accelator/emergency brake piston-unit which controls a second valve device (5) is a first compressed connecting passage (3, 4', 47) between said control chamber (QAC) and a bleeder nozzle (6) and additionally a third valve devices (46'') in a second compressed air connecting passage (2, 2'', 48) between said brake pipe (BP) and atmosphere, as well as said first valve device (sensor 8).

4,552,412

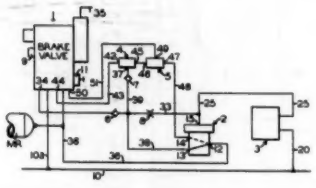
BRAKE PIPE CHARGING CUT-OFF ARRANGEMENT

Richard F. Balukin, Penn Hills, and John R. Reiss, North Versailles, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Jul. 20, 1984, Ser. No. 632,985

Int. Cl.[4] B60T *11/32*

U.S. Cl. 303—67 **8 Claims**



1. A brake pipe charging cut-off system for a railway vehicle comprising:

(a) a source of fluid under pressure;

(b) a brake pipe normally charged with fluid pressure from said source;

(c) a brake valve device including a brake pipe cut-off valve operable in response to pressurization thereof to interrupt said charging of said brake pipe;

(d) an actuating valve having a control chamber pressurization of which effects operation of said actuating valve to a first position in which said source of fluid under pressure is connected to said control chamber and depressurization of which effects operation of said actuating valve to a second position in which said source of fluid under pressure is cut off from said control chamber and connected to said brake pipe cut-off valve;

(e) rate sensing valve means for venting said control chamber of said actuating valve in response to an emergency rate of reduction of said brake pipe pressure; and

(f) a choke via which said source of fluid pressure is connected to said control chamber in said first position of said actuating valve.

4,552,413

ANTI-SKID BRAKE CONTROL SYSTEM FOR AUTOMOBILES

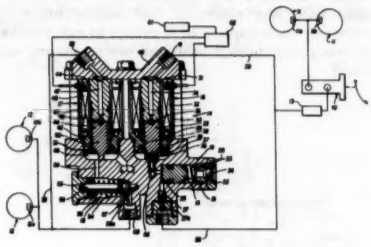
Takashi Fujii; Masamoto Ando, both of Toyota, and Takumi Nishimura, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 7, 1983, Ser. No. 511,484

Claims priority, application Japan, Jul. 9, 1982, 57-120148

Int. Cl.[4] B60T *8/08*

U.S. Cl. 303—106 **12 Claims**



1. An anti-skid brake control system for a vehicle comprising:

a master cylinder;

at least one rear wheel brake cylinder;

brake pressure circuit means for communication of said master cylinder with said rear wheel brake cylinder;

hydraulic pressure control means for controlling hydraulic brake pressure supplied from said master cylinder to said rear wheel brake cylinder through said brake pressure circuit means, said hydraulic pressure control means comprising a first electromagnetic valve interposed between said master cylinder and said rear wheel brake cylinder and being operable to interrupt the communication between said master cylinder and said rear wheel brake cylinder and to establish the communication between said rear wheel brake cylinder and a reservoir upon energizing thereof, a second electromagnetic valve interposed between said first electromagnetic valve and said rear wheel brake cylinder and being normally open, and a pressure reducing valve interposed in parallel with said second electromagnetic valve between said first electromagnetic valve and said rear wheel brake cylinder; and

means electrically connected with said hydraulic pressure control means for causing the energized position of said first electromagnetic valve upon generating the initial locking tendency at a rear wheel to reduce the hydraulic brake pressure, said means further being operable for causing the de-energized position of said first electromagnetic valve and for causing and maintaining the energized position of said second electromagnetic valve upon fading said initial locking tendency.

4,552,414

HYDRAULIC CIRCUIT FOR AN ANTI-LOCKING BRAKING SYSTEM

Etsuo Fujii; Makoto Satoh, both of Saitama, and Mitsuo Toyoda, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,732

Claims priority, application Japan, Oct. 29, 1982, 57-164871; Oct. 31, 1982, 57-164674; Nov. 15, 1982, 57-172757; Nov. 15, 1982, 57-172758

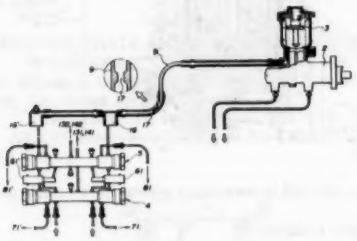
Int. Cl.[4] B60T *8/02*

U.S. Cl. 303—115 **1 Claim**

1. In an anti-lock braking system of the type including a master brake cylinder for applying braking pressure, said master brake cylinder having a hydraulic fluid reservoir, hydraulic pressure modulator means for regulating the braking pressure

to prevent brake locking, said modulator means having a relieved hydraulic fluid chamber, and hydraulic fluid line means operatively connecting said relieved hydraulic fluid chamber to said master brake cylinder for transferring hydraulic fluid in said relieved hydraulic fluid chamber to said reservoir during regulation of the braking pressure, the improvement comprising:

means for preventing air trapped within said fluid line means from being transferred to said modulator means, said preventing means comprising said reservoir being positioned entirely at a location above an inlet connection of said fluid line means to said master brake cylinder, whereby such trapped air is caused to move upwardly by its buoyancy through said fluid line means and said reservoir;



means for, in the event of the occurrence of a leak in said fluid line means, ensuring a required supply of hydraulic fluid for said relieved hydraulic fluid chamber, said ensuring means comprising buffer chamber means in said fluid line means for accumulating therein hydraulic fluid, said buffer chamber means being positioned at a level below said inlet connection; and

means for throttling the flow of hydraulic fluid from said relieved hydraulic fluid chamber to said reservoir, and thereby for preventing depletion of the accumulation of hydraulic fluid in said buffer chamber means, said throttling means comprising a restriction of the internal size of said fluid line means, said restriction being located between said buffer chamber means and said inlet connection.

4,552,415

ADJUSTABLE DRAWER MOUNTING ASSEMBLY

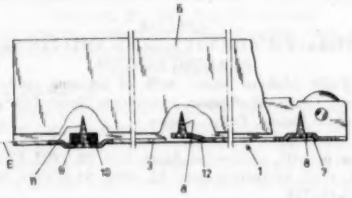
Manfred Fulterer, Lustenau, Austria, assignor to Fulterer Gesellschaft m.b.H., Lustenau, Austria

Filed Jul. 31, 1984, Ser. No. 636,398

Claims priority, application Austria, Aug. 3, 1983, 2814/83; Apr. 25, 1984, 1375/84

Int. Cl.[4] A47B *88/04*

U.S. Cl. 308—3.8 **13 Claims**



1. A drawer mounting assembly slidably mounting a drawer on a base member to enable said drawer to be withdrawn from said base member in a pullout direction, said drawer having a bottom side, said assembly comprising: a longitudinal rail member having a longitudinal dimension which extends parallel to said pullout direction and a support flange extending from said rail member essentially in a horizontal plane beneath said bottom side of said drawer over substantially the entire length of said rail member; slider means supporting said rail member in sliding engagement on said base member; lug means on said rail member connected with said support flange and adapted to be deformed to enable movement thereof relative to said horizontal plane; and connector means affixing said lug means to said bottom side of said drawer; said lug means being arranged to enable deformation thereof after attachment to said drawer thereby to adjust the position of said drawer relative to said base member during mounting thereof; said lug means comprising a first lug member which is located on said rail member at a rearward position taken relative to said pullout direction and which is located above said horizontal plane and a second lug member which is located forwardly taken relative to said pullout direction and which is located below said horizontal plane, with a resilient buffer member being provided between said bottom side of said drawer and said second lug member and with said connector means comprising screws fastening both said first and said second lug members to said bottom side of said drawer.

4,552,416

REARING ARRANGEMENT FOR GUIDING A CARRIAGE IN A STRAIGHT LINE ALONG A GUIDE RAIL

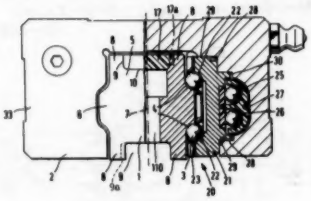
Wolfgang Lehmann, Stuttgart, and Hans-Walter Aab, Waiblingen, both of Fed. Rep. of Germany, assignors to Neff Gewindespindeln GmbH, Waldenbuch, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,129

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313128

Int. Cl.[4] F16C *29/06*

U.S. Cl. 308—6 C **17 Claims**



1. In combination with a base structure (12) including at least one projection,

bearing arrangement for guiding a carriage (2) in a straight line along a guide rail (1) wherein

the guide rail (1) is formed with four longitudinal guide tracks (4) thereon;

the carriage (2) is longitudinally movable with respect to the guide rail;

an interposed longitudinal ball bearing assembly (20) is provided, interposed between the carriage (2) and the guide rail (1), and supporting the carriage on the guide rail, said ball bearing assembly (20) having a plurality of balls (3) for rolling and weight bearing contact with the guide tracks (4) on the guide rail, said assembly including return track means (24, 25, 26) for returning and recirculating unloaded balls in an endless chain around the guide tracks, and wherein

the guide rail (1) is formed, at the side of the rail remote from the position of the carriage thereon, with at least two longitudinal parallel ribs (8), defining a longitudinal groove (9) therebetween;

at least one projection (11) of the base structure fitting in the groove (9) between said parallel ribs;

the carriage (2) has generally C-shaped cross section defin-

ing an insertion opening (34), the inside diameter of the insertion opening being larger than the width of the guide rail (1);

said ball bearing assembly (20) forming a unitary element including said balls (3), said return track means (24, 25, 26) and ball retention means (23) for retaining the balls on said assembly and retaining said ball captive thereon, comprising a ball race body (21) having ball races (22) thereon, located for operation of the balls between guide tracks (24) on the rail and the ball race 5(22) on said ball race body, said ball race body further having said return track means (24, 25, 26) secured to said ball race body (21) and forming part of said unitary element, said ball retention means being secured to said ball race body and forming part of said unitary element, to retain the balls in and on the respective ball races and in and on said unitary element;

said carriage being formed with receiving recesses (30) at either side of the guide rail to receive said ball bearing assembly (20) as a unitary element (20) including said ball race body, and said return track means (24, 25, 26);

and matching, engaging, fitting surfaces (28, 29) formed respectively, in said opening (34) of said carriage (2) and the ball race body (21) for positioning of the ball race body, and hence the ball bearing assembly (20) in the carriage upon insertion of the bearing assembly (20) into the carriage and thereby recisely locating the balls (3) between the guide tracks (4) on the rail, and the ball races (22) on the ball race body of the bearing assembly (20).

4,552,417

POLYGONAL TYPE OPTICAL DEFLECTOR

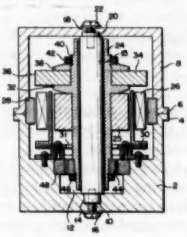
Mitsuo Yamashita, Yokohama; Goro Oda, Sagamihara, and Kiyoshi Tomimori, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 14, 1983, Ser. No. 513,795

Claims priority, application Japan, Jul. 20, 1982, 57-126123

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 308—10 **3 Claims**



1. A polygonal type optical deflector, comprising:

a motor housing;

a fixed shaft extending within the motor housing;

a rotatable hollow cylindrical spindle into which the shaft is coaxially and detachably inserted, the inner surface of the spindle facing the outer surface of the shaft with a gap provided therebetween;

a polygonal mirror fixed to the hollow cylindrical spindle and rotatable together with the spindle.

a dynamic pressure type radial bearing consisting of a smooth plane formed on one of the inner surface of the spindle and the outer surface of the shaft and parallel straight grooves extending in parallel with the axis of the shaft and formed on the other of the inner surface of the spindle and the outer surface of the shaft;

a magnetic thrust bearing for suspending the hollow cylindrical spindle in its axial direction;

a motor rotor fixed to the hollow cylindrical spindle; and

a motor stator fixed to the housing for rotating the motor rotor.

4,552,418

MOUNTING FOR DATA DISPLAY EQUIPMENT

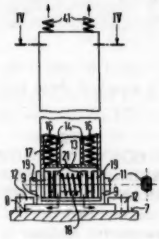
Herbert Sarnezki, Munich, and Klemens Hübner, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,664

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235457

Int. Cl.⁴ H04N *5/64*

U.S. Cl. 312—242 **12 Claims**



1. Mounting for display equipment, comprising a lower part in the form of a base plate having an upper surface and being supported in a level position, an upper part in the form of a box-shaped housing, a picture screen surrounded by said upper part, a connecting part in the form of a turntable rotatably supported about a vertical axis on said upper surface of said lower part, a support arm formed of a first elongated hollow bottom part and a second elongated hollow head part each having first and second ends, said second ends of said first and second parts being telescoped together, said first end of said first part being rotatably supported about a horizontal axis on said connecting part, said first end of said second part being rigidly connected to said upper part, at least one compensating element disposed in said support arm for pushing said first and second parts apart, a notch strip disposed in one of said first and second parts having at least one row of detent notches formed therein along the longitudinal direction of said support arm, at least one ratchet pawl rotatably supported about a horizontal axis in the other of said first and second parts, said ratchet pawl being engaged in one of said detent notches in a rest position thereof and being movable out of said detent notches in a disengaged position thereof, and a detent rod engageable with said ratchet pawl and operable from outside the mounting for moving said ratchet pawl into said disengaged position.

4,552,419

MINI-DESK

William L. Poole, 8229 Kingsbrook, #225, Houston, Tex. 77024

Filed May 24, 1984, Ser. No. 613,231

Int. Cl.⁴ A47B *97/00, 85/00*

U.S. Cl. 312—281 **10 Claims**

1. A portable desk comprising:

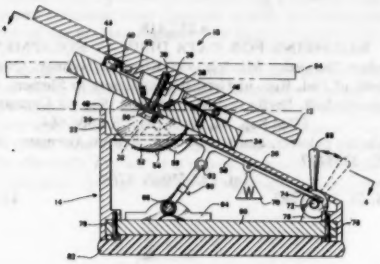
a body having a generally flat surface thereabout;

a first surface connected to said body, said first surface capable of canting with respect to said body;

control means arranged about said body so as to maintain said first surface in at least one fixed position with respect to said body; and

a turntable means interposed between said first surface and

said body, said first surface connected to said turntable means so as to permit rotational movement of said first



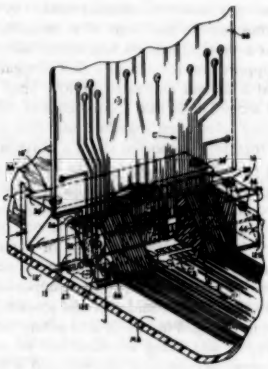
surface with respect to said body, said turntable means being pivotally attached about said body.

4,552,420

ELECTRICAL CONNECTOR USING A FLEXIBLE CIRCUIT HAVING AN IMPEDANCE CONTROL ARRANGEMENT THEREON

George T. Eigenbrode, deceased, late of Camp Hill, Pa. (by Judy E. Eigenbrode, executrix), assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 2, 1983, Ser. No. 557,702
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 R **22 Claims**



1. An electrical connector for electrically connecting an array of signal conduction paths disposed on a first substrate with a corresponding array of signal conduction paths disposed on a second substrate, the connector comprising:

a core;

a flexible circuit wrapped around the core, the flexible circuit having thereon a first surface and a second surface;

an array of signal conduction tracings disposed on the first surface of the flexible circuit, the signal conduction tracings being arranged to electrically contact corresponding ones of the signal conduction paths on the first and the second substrates;

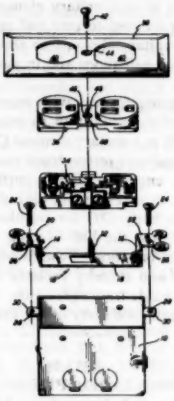
an impedance control arrangement disposed on the second surface of the flexible circuit comprising at least one ground tracing carrying a signal return current through a ground potential connection at both ends of the ground tracing, the ground tracing being arranged with respect to the signal conduction tracings on the first surface so that the impedance of the signal conduction tracings matches the impedance of the corresponding conduction paths on the first and second substrates.

4,552,421

ELECTRIC OUTLET HAVING NOVEL SCREW ANCHOR AND GROUND CONNECTION

William B. Drapkin, Jamesville, N.Y., assignor to Pass & Seymour, Inc., Solvay, N.Y.

Filed Jan. 23, 1984, Ser. No. 572,804
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 R **2 Claims**



1. An electrical outlet assembly having electrical terminals and receptacles for receiving a straight blade plug comprising:

(a) a box-like housing having wall members defining an open side;

(b) an electrically grounded mounting strap of flat, electrically conducting metal having opposite end portions respectively secured to an opposing pair of said wall members, and joined by a pair of parallel legs to a central portion in a U-shaped configuration, whereby said central portion lies in a first plane spaced from a second plane in which said end portions lie;

(c) a body portion upon which the electrical terminals and receptacles for the blades are mounted;

(d) a threaded screw fastener;

(e) a receptacle cover having openings for passage of the plug blades and first aperture means lying essentially in said second plane for passage of said screw fastener;

(f) a wall plate positioned in covering relation to said receptacle cover and open side of said housing having open areas through which said receptacle cover openings are exposed and second aperture means in alignment with said first aperture means for loose passage therethrough of said screw fastener;

(g) means retaining said receptacle cover, said body portion and said mounting strap in a predetermined assembled orientation within said housing;

(h) an elongated member formed integrally with said central portion and bent along a fold line to extend from said first plane toward said first aperture means and extending into the path of said screw fastener extending through said second and first aperture means toward said mounting strap central portion;

(i) said elongated member being flexible about said fold line and bent at a medial position to extend to a free end out of said screw fastener path; and

(j) said screw fastener being anchored by threaded engagement with said first aperture means to hold said wall plate in position whereby, as said screw fastener is advanced through said second and thence through said first aperture

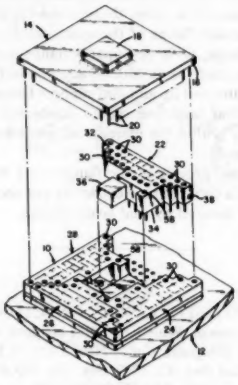
means, it contacts said elongated member at said medial position flexing said elongated member about said fold line to remain in electrical contact therewith, thereby providing a ground path for said screw fastener and any metal parts with which it is in contact.

4,552,422

MODULAR RECEPTACLE PIN GRID ARRAY

Benny M. Bennett; Robert F. Meehan, both of Harrisburg, and Dale R. Zell, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 14, 1983, Ser. No. 475,268
Int. Cl.[4] H01R *23/72*
U.S. Cl. 339—17 CF **5 Claims**



1. A modular receptacle receiving a high density array of pin terminals from an integrated chip carrier, the receptacle having a mating face and an opposite directed mounting face with a plurality of terminal passages extending there between in parallel spaced rows, a like plurality of receptacle terminals, each terminal mounted in a respective passage and having a receptacle pin engaging portion directed toward said mating face, and a mounting portion extending from the mounting face contacting a conductive portion of a circuit board characterized in that said receptacle is formed by four intermating modules of insulative material, each module having a longer outer side and a shorter inner side connected at opposite ends, by stepped end profiles, each step of each end profile corresponding to a row of passages, and a keying block recessed from said mating face and extending from the inner side of each said module whereby said modules are interfitted by said stepped end profiles with the recessed keying blocks forming a cavity to receive a chip of a chip carrier therein.

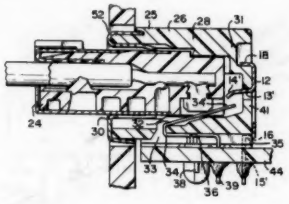
4,552,423

SHUNTED ELECTRICAL CONNECTORS

Robert C. Swengel, Jr., York, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 30, 1984, Ser. No. 595,571
Int. Cl.[4] H01R *31/08*
U.S. Cl. 339—19 **3 Claims**

1. An electrical connector socket comprising an insulating housing having first, front and second, rear ends, spaced apart wall portions extending between the ends and across the rear end defining between them a plug receiving cavity open at a plug receiving mouth at the first end, terminals extending cantilever spring fashion rearwardly from root ends adjacent one wall portion adjacent the mouth across the cavity away from the one wall portion to free ends spaced from the one wall portion adjacent the rear end so that insertion of the plug into the cavity deflects the terminals towards the one wall portion, a programmable shunt stamped and formed from sheet metal and comprising a web portion from which a series of individual contact fingers have been stamped to lie adjacent the plane of the web at the same pitch as terminals, the shunt being secured to the housing with the web adjacent and face-to-face with a wall portion, preselected individual contact



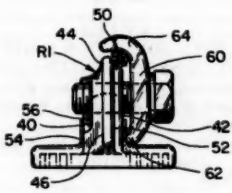
fingers of the series having been bent to project transversely out from the plane of the web into the rear end of the cavity on a side of the terminals remote from the one wall portion into engagement with free end portions of preselected terminals thereby to common the terminals when the plug is not received in the cavity, the unselected contact fingers remaining adjacent the plane of the web.

4,552,424

HIGH VOLTAGE TERMINAL

James J. Seaquist, Birmingham, and Elred R. Harmon, Pell City, both of Ala., assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 409,202, Aug. 18, 1982,. This application Nov. 14, 1983, Ser. No. 551,546
Int. Cl.[4] H01R *27/00*
U.S. Cl. 339—32 R **6 Claims**



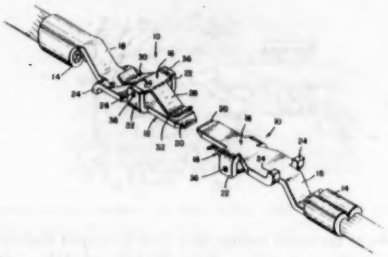
4. A high voltage bushing terminal comprising a conductive first member having a threaded bore for connecting to an insulator, said first member having a first elongated recess extending substantially parallel to the axis of said threaded bore and a second elongated recess angularly related to said axis of said threaded bore, said first member having generally opposed surfaces with said first and second recesses located in one of said surfaces and in which the other surface has third and fourth elongated recesses respectively aligned with said first and second recesses, said first member having a threaded opening equally spaced from said first and second recesses, a second member having an elongated arcuate surface along one edge and a base along an opposite edge with an opening between said arcuate surface and said base, and a threaded fastener extending through said opening in said second member and received in said threaded opening to be operable to clamp a conductor between said elongated arcuate surface and each of said recesses independently.

4,552,425

HIGH CURRENT CONNECTOR

Timothy B. Billman, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 27, 1983, Ser. No. 517,867
Int. Cl.[4] H01R *25/00*
U.S. Cl. 339—47 R **2 Claims**



1. An electrical connector, comprising:

a. a strip of conductive material having wire retaining means at a back end and an elongated blade at a front end;

b. support brackets attached to opposite sides of the blade and having free ends extending upwardly therefrom with pin receiving means adjacent the free ends, said brackets defining a yoke-like structure; and

c. an elongated spring member having a bar with a pin on each side, said spring member positioned over the blade and in between the brackets with the pins being received in the pin receiving means for pivotally mounting the spring member thereon, said spring member further having a long spring arm attached to the bar and extending towards the front end and obliquely downwardly towards the blade and a short spring arm attached to the bar and extending towards the back end and obliquely downwardly towards the blade, said spring arms and blade defining two separate spaces therebetween for receiving another blade or a tab terminal.

4,552,426

MULTIPLE CONNECTOR HOOD FOR INTERCONNECTIONS TO PRINTED CIRCUIT BOARDS

George S. Bettencourt, Murrysville, and Robert E. Strickler, Plum Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1983, Ser. No. 532,424
Int. Cl.[4] H01R *13/514*
U.S. Cl. 339—75 M **12 Claims**

1. A connector hood for use in connecting at least one socket connector to at least one card edge connector of a printed circuit board, comprising:

(a) a pair of mating wall sections formed from a dielectric material, each wall section having top, bottom, rear and front portions, the top, bottom and rear portions having inwardly extending, mating flanges thereon and the front portion having an inwardly directed lip, the flanges releasably secured together to provide an opening along the front of the mated wall sections between confronting lips thereof, at least one of the wall sections having a vertically extending, inwardly directed support flange spaced from the lips thereof;

(b) first engaging means adjacent the front portion of the wall sections for engaging spacer blocks therebetween, said first engaging means being indentations in the inner surface of the wall section;

(c) a plurality of spacer blocks, formed from a dielectric material, having (1) second engaging means thereon for engagement with the first engaging means of the wall section, said second engaging means being projections fitting within said indentations in the inner surface of the wall section when the spacer blocks are secured within the wall section, (2) a recess therein and (3) at least one side flange, the side flange of the spacer block resting on said support flange, with the support flange positioned within said recess, said spacer blocks, adapted to fit between said inwardly directed lip and said support flange and with said lips secure at least one socket connector therebetween, completely within the mated wall sections, adjacent said opening; and

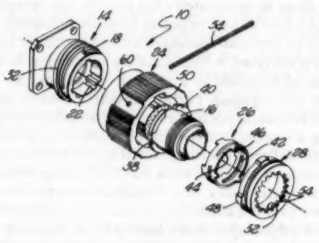
(d) at least one groove in the flanges of a wall section for passage of a cable to be electrically connected to a socket connector secured by said space blocks.

4,552,427

SELF-LOCKING CONNECTOR

Eleanor A. Landgreen, Whittier, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,359
Int. Cl.[4] H01R *13/625*
U.S. Cl. 339—89 M **18 Claims**



1. A connector member adapted to mate with a second connector member comprising:

a barrel having rotatable coupling means thereon for drawing said connector members into mating engagement;

self-locking means associated with said barrel and said coupling means activated near or at the end of the mating engagement of said connector members for resisting rotation of the coupling means in the uncoupling direction of rotation thereof;

said self-locking means comprising a locking spring and detent means;

said locking spring comprising a generally cylindrical ring fixed against rotation on said barrel;

said detent means including means providing a plurality of circumferentially spaced recesses surrounding said barrel and fixed to rotate with said coupling means; and

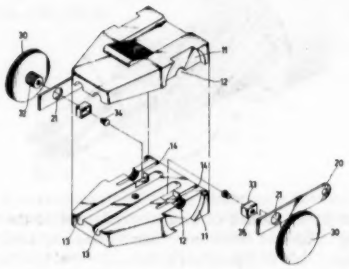
said cylindrical ring having a section thereof resilient in the axial direction, said section embodying a locking tab in front of said recesses and engageable with at least one of said recesses near or at the end of said mating engagement.

4,552,428

ELECTRICAL PLUG

Ling H. Liu, No. 97, Lane 192, Shui Yuan Rd., Fong-Yen City, Taiwan

Filed Jun. 2, 1982, Ser. No. 384,433
Int. Cl.[4] H01R *11/20*
U.S. Cl. 339—97 P **2 Claims**



1. An electrical plug comprising

a plug body with front and rear end faces interconnected by side faces;

a plurality of grooves formed in the plug body through the front end face;

a plurality of conducting prongs fixedly disposed in the grooves with their front portions respectively projecting through the front end face;

a plurality of blind channels formed in the plug body through the rear end face with the inner portion thereof extending into the plug body adjacently parallel with the rear portions of said grooves and communicating with said grooves to create an opening in a wall between adjacent ones of said grooves and said blind channels, such that the blind channels are unobstructed by said prongs for facilitating the insertion of insulated conductors into said channels;

an externally disposed driving means suitable for hand operation;

a conductive screw member having one end fixed to said driving means and extending into said plug body toward said blind channel through a threaded opening formed in the rear portion of said conducting prong;

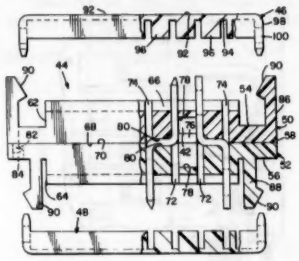
a rectangular serrated member having teeth arranged in substantially perpendicular rows so that a row of teeth is adjacent to each of correspondingly substantially perpendicular walls of the rectangular channel in the plug body wherein said serrated member is rotatably disposed at the other end of said conductive screw, said drive means being operable to move said serrated member axially in said opening and substantially perpendicularly relative to the longitudinal axis of said insulated conducting member to complete an electrical connection between said conducting prong in the groove and said insulated conducting member received in the adjacent blind channel, said serrated member and said opening cooperating to substantially prevent rotational movement of said serrated member and to permit axial movement of the serrated member under the control of the driving means without inducing torque in said insulated conductor, without stripping the insulated layer from said insulated conductor, and without the need for any tools.

4,552,429

MODULAR ELECTRICAL CONNECTOR FOR CONNECTING WIRES IN CABLE ENDS

Gerardus M. van Alst, Oss, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 1, 1984, Ser. No. 656,795
Int. Cl.[4] H01R *13/39*
U.S. Cl. 339—99 R **11 Claims**



1. An electrical connector of the type comprising an insulating body having oppositely directed first and second major surfaces and a plurality of double-ended electrical terminals mounted in, and extending through, the insulating body at terminal sites, each of the terminals having a plate-like first end portion which extends from the first surface and a plate-like second end portion which extends from the second major surface, each of the end portions having an outer edge which is spaced from its associated major surface and having side edges which extend from its outer edge to the associated major surface, each of the first and second end portions having a wire-receiving slot which extends inwardly from its outer edge, the connector being characterized in that:

the first and second plate-like end portions have first and second wire cutters in alignment therewith respectively, the first and second wire cutters each having a cutting edge and having side edges which are in substantial alignment with the outer edges and the side edges respectively of the first and second plate-like end portions respectively,

the first and second wire cutters being spaced from the first and second end portions respectively, the first wire cutter being spaced from the first end portion by a distance which is less than the spacing between the second wire cutter and the second end portion,

a connecting section is provided which connects the first and second plate-like end portions to the first and second wire cutters,

each of the terminals being of one piece construction and having been produced by bending a flat blank and locating the wire cutters in alignment with the plate-like end portions whereby,

first and second wires can be connected to each of the terminals by moving the wires laterally of their axes and into the wire-receiving slots of each of the end portions, and the wires will be cut by the wire cutters during movement into the wire-receiving slots, and the insulating body can be stacked onto a substantially identical insulating body with the first wire cutters and the first end portions of the terminals of one of the bodies between the second wire cutters and the second end portions of the terminals in the other insulating body.

4,552,430

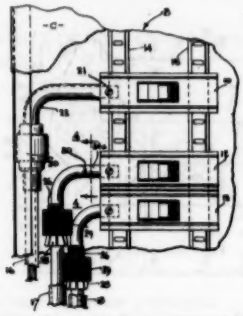
CONNECTOR HEAD FOR ELECTRIC TERMINAL BOX

Stephanie A. Myers, Santa Ana, Calif., assignor to Myers Electric Products, Inc., Montebello, Calif.

Filed Sep. 30, 1982, Ser. No. 429,534
Int. Cl.[4] H01R *13/11*
U.S. Cl. 339—242 **2 Claims**

1. A generally elongated terminal box housing a plurality of

transversely disposed, electrical conductors such as circuit breakers located side by side, each with a mutually adjacent, inner end spaced inward from an opposing longitudinal wall of the box so as jointly with said longitudinal wall to define a longitudinal channel therealong leading to an end outlet of said box, said plurality of conductors each being coupled to one of a group of electrically conductive, elbow-shaped connector



heads, each connector head being formed with one arm bearing an insertion lance having means for coupling to one of said conductors adjacent said inner end, and a distant arm encased in a sheath of insulation, being disposed in said channel and having terminal coupling means for attachment to an individual cable extendable through said end outlet, the distant arms of said connector heads being thus disposable longitudinally along said channel.

4,552,431

OPTICAL FIBERS WITH PLASTIC CORE AND POLYMER CLADDING

Louis-René Allemand, Limours; Jean Calvet, Paris; Jean-Claude Cavan, Vincennes, and Jean-Claude Thevenin, Velizy, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

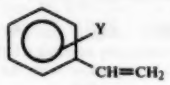
Filed Sep. 1, 1983, Ser. No. 528,479

Claims priority, application France, Sep. 23, 1982, 82 16026

Int. Cl.⁴ G02B *5/172*

U.S. Cl. 350—96.34 **15 Claims**

1. Plastic optical fibers comprising a core formed by a polymer of a compound having the formula:



in which Y is hydrogen or alkyl; and a cladding consisting essentially of a polymer selected from the group consisting of at least one vinyl acetate polymer and at least one fluorinated derivative of vinyl acetate.

4,552,432

HYBRID CABLE

Gene S. Anderson, Elburn, and David B. Watson, Batavia, both of Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 21, 1983, Ser. No. 487,094

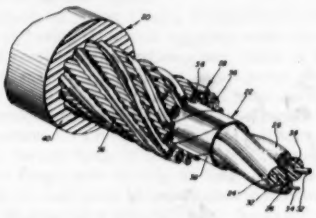
Int. Cl.⁴ G02B *5/16*

U.S. Cl. 350—96.23 **8 Claims**

1. A hybrid cable of substantially uniform cross section throughout its length for concurrently carrying optical signals and electrical signals, said cable comprising:

a high strength central section including a pair of high strength members engaging one another, each said member having a metallic core with a resilient sleeve thereabout, said central section further including at least one optical conductor having an optically conductive core with a resilient sleeve thereabout, said optical conductor engaging both of said strength members and extending substantially to the periphery of said central section;

a surrounding section including a plurality of electrical conductors surrounding said central section; and



an outer jacket formed of insulating material of the type having crush and abrasion resistance whereby electrical equipment can be connected to said electrical conductors at spaced locations intermediate the ends of said cable without interference from components of said central section.

4,552,433

OPTICAL FIBRE CABLE MANUFACTURE

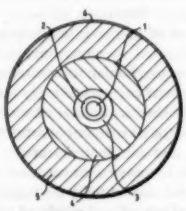
James G. Titchmarsh, Harlow, and Peter G. Hale, Writtle, both of England, assignors to Standard Telephones and Cables, plc, London, England

Filed Sep. 21, 1983, Ser. No. 534,250

Claims priority, application United Kingdom, Sep. 22, 1982, 8227034

Int. Cl.⁴ G02B *5/16, 5/14;* D02G *3/00;* B32B *9/00*

U.S. Cl. 350—96.23 **5 Claims**

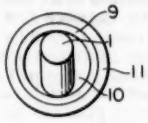


1. A single fibre optical cable that can be dispensed under water in which a glass optical fibre having an internal optical waveguiding structure forms the central core of the cable, and is encased in two or more plastic coatings the first of which is applied to the optical fibre to form a plastics packaged optical fibre, around which are stranded in opposite senses first and second layers of high modulus plastics yarns, the cable being completed by a liquid permeable outer wrap of yarn with adjacent abutting or overlapping turns.

4,552,434
CRYSTALLINE INFRARED OPTICAL FIBER WITH A SMALL GAP AND A PROCESS FOR THE PRODUCTION OF SAME

Kazuhito Murakami, and Kenichi Takahashi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 11, 1983, Ser. No. 474,350
Claims priority, application Japan, Mar. 16, 1982, 57-40254; Mar. 16, 1982, 57-40255; Mar. 16, 1982, 57-40256
Int. Cl.⁴ G02B *5/14*
U.S. Cl. 350—96.30 **14 Claims**



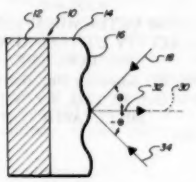
1. A crystalline fiber, which comprises a core crystal fiber for transmitting infrared rays provided in a cladding crystal pipe having a smaller refractive index than the core crystal fiber with a gap of 0.01 to 0.1 mm between the core crystal fiber and the cladding crystal pipe, the core crystal fiber and the cladding crystal pipe being crystalline materials selected from the group consisting of thallium halides, silver halides, alkali metal halides and mixed crystals thereof in such a combination as to give a larger refractive index to the core crystal fiber than the cladding crystal pipe.

4. A process for the production of a crystalline fiber, which comprises inserting a core crystal fiber in a cladding crystal pipe, and subjecting the fiber and pipe to drawing through a die to thereby coat the core crystal fiber with the cladding crystal pipe such that a gap of 0.01 to 0.1 mm exists between the core crystal fiber and the cladding crystal pipe.

4,552,435
PHASE GRATING PULSE STACKER

Karlheinz von Bieren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 248,930, Mar. 30, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,703
Int. Cl.⁴ G02B *27/10*
U.S. Cl. 350—169 **13 Claims**



1. An apparatus for combining first and second beams of substantially equal wavelength λ, said apparatus comprising a phase grating and means for directing said first and second beams to strike said phase grating at a common point of incidence and from angles of incidence Θ and −Θ respectively, said phase grating having a sinusoidal surface for diffracting said first and second beams into groups of ordered diffracted beams, said sinusoidal surface having a modulation wavelength Λ for causing a preselected diffracted order q from each said groups of diffracted beams to propagate in a direction normal to said phase grating, said modulation wavelength being determined substantially by the relationship:

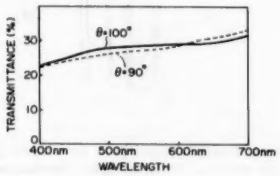
$$\Lambda = q(\lambda/\sin\Theta),$$

said sinusoidal surface having a modulation depth S which maximizes the energy allocated to said preselected diffracted order q.

4,552,436
LIQUID CRYSTAL DISPLAY HAVING UNIFORM TRANSMITTANCE

Shuichi Kozaki; Yutaka Ishii, and Fumiaki Funada, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1983, Ser. No. 517,452
Claims priority, application Japan, Jul. 28, 1982, 57-132878
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—337 **7 Claims**



1. A liquid crystal display, comprising;
a polarizer having a first polarization axis;
an analyzer having a second polarization axis, the first and second polarization axes forming an angle therebetween; and
a liquid crystal layer, mounted between said polarizer and said analyzer, having a refractive index anisotropy and thickness, such that when the product of the refractive index anisotropy and thickness is approximately 0.5 μm, the angle is selected in the range from 92 and 110 degrees, so that a combined light transmittance of said polarizer and said analyzer is a maximum in the wavelength range from 400 nm to 500 nm.

4. A liquid crystal display, comprising;
a polarizer having a first polarization axis;
an analyzer having a second polarization axis, the first and second polarization axes forming an angle therebetween; and
a liquid crystal layer, mounted between said polarizer and said analyzer, having a refractive index anisotropy and a thickness, such that when the product of the refractive index anisotropy and thickness is approximately 1.0 μm, the angle is selected in the range from 94 to 120 degrees, so that a combined light transmittance of said polarizer and said analyzer is a maximum in the wavelength range from 400 nm to 500 nm.

4,552,437
INTERNAL MASKING LAYER TO PREVENT PARALLAX IN AN ELECTRO-OPTICAL DISPLAY OR INDICATOR UNIT

Karl Gantenbrink, Karlsruhe; Peter Knoll, Ettlingen, and Peter Rapps, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,700
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237323
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—339 R **4 Claims**

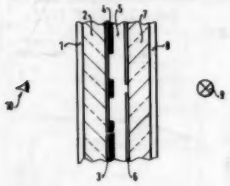
1. An internally-masked, parallax-free electro-optical display unit having
a transparent front carrier plate adapted to face an observer;
a continuous transparent front electrode layer secured to the front carrier plate at the side thereof remote from the observer;
a rear carrier plate spaced from the front carrier plate;
a rear electrode secured to the rear carrier plate at the side

thereof facing the observer, and hence facing the front electrode;

an electrically responsive medium filling the space between said plate and electrodes which, upon application of an electric voltage between the electrodes exhibits an optically observable effect; and

masking means for masking selected portions of the optical effects,

wherein, in accordance with the invention,



the masking means comprises a developed photographic emulsion secured between said continuous transparent front electrode layer and said electrically responsive medium,

said emulsion being developed in such a manner as to render invisible, to the observer, track zones, support points, and cross-overs between conductive tracks of said rear electrode.

4,552,438

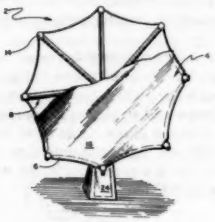
CABLE TENSIONED MEMBRANE SOLAR COLLECTOR MODULE WITH VARIABLE TENSION CONTROL

Lawrence M. Murphy, Lakewood, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 9, 1984, Ser. No. 569,085

Int. Cl.[4] G02B *5/10, 7/18;* **H01Q** *19/12*

U.S. Cl. 350—608 **13 Claims**



1. A solar collector comprising:

(a) a membrane member for concentrating sunlight;

(b) a plurality of elongated structural members for suspending the membrane member thereon;

(c) a plurality of control members for adjusting a tension in said membrane member and for controlling a focus provided by said membrane member, each one of said control members being disposed at a different corresponding one of said plurality of stuctural members;

(d) an elongated flexible tensioning member for tensioning said membrane member and holding said membrane member in tension; said tensioning member being coupled to said plurality of structural members, said tensioning member being adjustably tensioned with said control members; and

(e) a plurality of sleeve members for providing said membrane member with a desired surface contour during said tensioning of said membrane member, said plurality of sleeve members coupling said tensioning member to said membrane member such that said plurality of sleeve members uniformly and symmetrically stretch said membrane member in response to applying tension to said tensioning member with said control members.

4,552,439

COOLED MIRROR AND METHOD OF COOLING SAME PARTICULARLY USEFUL IN LASERS

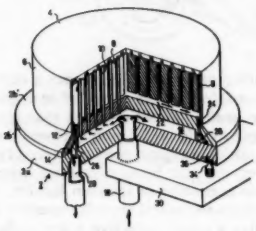
Ethan D. Hoag, Boston, Mass., and Amotz Ravid, Ramat-Gan, Israel, assignors to Metalworking Lasers International Ltd., Tel Aviv, Israel

Filed Oct. 21, 1983, Ser. No. 544,132

Claims priority, application Israel, Nov. 1, 1982, 67142

Int. Cl.[4] G02B *5/08*

U.S. Cl. 350—610 **19 Claims**



1. A cooled mirror particularly useful in lasers, comprising a reflector member, a rigid base, a plurality of spaced supporting elements joined to the underface of said reflector member and to said base such as to reduce bending of said reflector member by thermal deformation, and cooling means for cooling said reflector member; characterized in that said cooling means comprises an inlet for a cooling fluid, an outlet for the cooling fluid, and fluid-conducting means constraining the cooling fluid to flow from said inlet, through the spaces between said plurality of spaced supporting elements along a plurality of paths which are in parallel between said inlet and outlet, and then through said outlet to impinge on the underface of said reflector member at a plurality of discrete points thereon each located in one of said parallel paths.

4,552,440

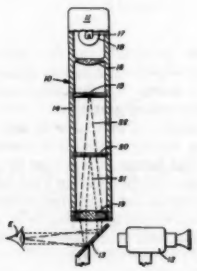
APPARATUS FOR DETERMINATION OF POTENTIAL VISUAL ACUITY UTILIZING A SLIT LAMP MICROSCOPE

David L. Guyton, 307 Somerset Rd., Baltimore, Md. 21210

Filed Oct. 12, 1983, Ser. No. 541,305

Int. Cl.[4] A61B *3/10*

U.S. Cl. 351—214 **11 Claims**



1. In combination with a slit lamp having an illumination

system and a microscope for examining the eye of a patient, the illumination system including a light source, aperture illuminated by said light source, and converging lens means interposed between said aperture and the eye to be examined, with said converging lens means forming an image of said aperture in the vicinity of the eye, the improvement comprising, said aperture being of pinhole size and a target transparency having figures of calibrated size thereon interposed in the slit lamp between said aperture and said converging lens means, whereby the target transparency figures are imaged by said converging lens means in order to determine the eyes' visual acuity.

4,552,441

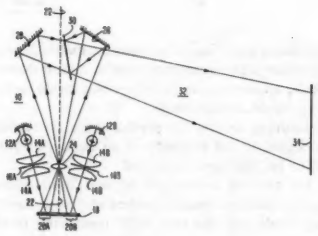
COLOR DISPLAY FROM A SINGLE LIGHT VALVE

Anthony G. Dewey, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 625,926

Int. Cl.[4] G03B *21/28*

U.S. Cl. 353—31 **4 Claims**



1. A color display comprising

a projection screen,

means for producing light of a first color for an image,

means for producing light of a second color for an image,

a light valve having a first color image positioned on a first side of the axis of a projection lens and a second color image positioned on the second side of said axis,

a first mirror adapted to fold the beam from said first color image,

a second mirror adapted to fold the beam from said second color image, and

a dichroic mirror adapted to transmit the spectral band reflected from said first mirror onto a preselected location on said screen and adapted to reflect the spectral band from said second mirror onto said preselected position on said screen, said dichroic mirror positioned so that the optical path lengths for the beams from said first and second color images to said dichroic mirror are equal, and the angles of incidence of said beams on said dichroic mirror are equal.

4,552,442

METHOD AND APPARATUS FOR USE IN PRODUCING AUTOSTEREOSCOPIC IMAGES

Graham S. B. Street, Impstone House, Pamber Rd., Silchester, Reading RG7 2NU, England

PCT No. PCT/GB83/00096, § 371 Date Nov. 30, 1983, § 102(e) Date Nov. 30, 1983, PCT Pub. No. WO83/03686, PCT Pub. Date Oct. 27, 1983

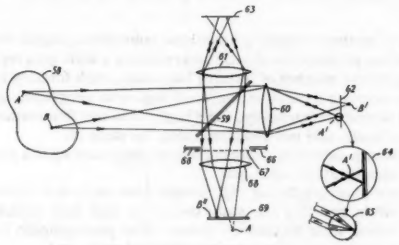
PCT Filed Mar. 30, 1983, Ser. No. 562,583

Claims priority, application United Kingdom, Apr. 7, 1982, 8210328; Jan. 13, 1983, 8300843

Int. Cl.[4] G03B *35/00*

U.S. Cl. 354—112 **44 Claims**

1. Apparatus for use in producing autostereoscopic images, comprising imaging means which comprises convergent optical means, said imaging means being arranged, for any given position thereof relative to an object field, to encounter rays having paths diverging over a range of relatively large angles from respective points in the object field and to converge rays from said points from a substantial part of said range generally towards respective intermediate image points in an intermediate image field; direction-selective means positioned in said intermediate image field and adapted such that rays in a plane which are generally converging relative to one another prior to impingement on said direction-selective means become generally diverging after impingement and rays in said plane which are generally diverging relative to one another prior to impingement become generally converging after impingement on said direction-selective means, said direction-selection means causing respective rays which are incident on said con-



vergent optical means prior to impingement on said direction-selective means to be returned to substantially the same portion of said convergent optical means previously encountered after impingement on the direction-selective means; and means for positioning photosensitive image recording means having a photosensitive layer in an image field spaced from said object field such that rays from said object field returned from said intermediate image field via substantially the same portion of said convergent optical means previously encountered converge towards respective image points in said image field at various points in front of and/or behind the photosensitive layer whereby composite stereoscopic information from said object field is recorded by said recording means for the production of an autostereoscopic image.

4,552,443

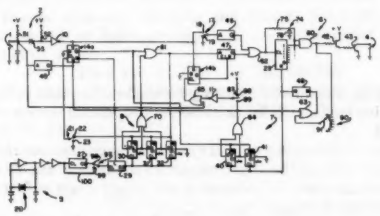
CAMERA SYSTEM

Joel G. Broida, 9430 La Jolla Shores Dr., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 172,774, Jul. 28, 1980, Pat. No. 4,468,106. This application Aug. 20, 1984, Ser. No. 642,118

Int. Cl.[4] G03B *15/03*

U.S. Cl. 354—132 **4 Claims**



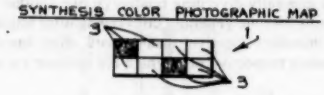
1. In a camera system in which a shutter is opened and closed, the improvement comprising a plurality of light sources, means for energizing said light sources serially when said shutter is open, means for selectively setting the numbers of light sources to be energized serially, means for selectively setting the length of the time intervals between energization of consecutive of said light sources, and means for selectively causing and preventing recycling of said light sources.

4,552,444

SYNTHESIS COLOR PHOTOGRAPHIC MAP AND METHOD OF MAKING SAME

Jean Beaupre, 3083 chemin des Quater Bourgeois, Ste-Foy, Canada (G1W 2K6)

Filed Nov. 30, 1984, Ser. No. 677,062
Int. Cl.⁴ G03B *19/00*
U.S. Cl. 354—354 **6 Claims**



1. A method of making a synthesis color photographic map, on a first predetermined scale and covering a wide geographic area, from a number of forestry base maps, each forestry base map covering a selective portion of said wide geographic area on a second predetermined scale larger than said first predetermined scale, said method comprising the steps of:

coloring each of said forestry base maps according to a given identification color code:

color photographying said forestry base maps thus colored while reducing the scale thereof to said first predetermined scale to thereby obtain color photographic base maps having said first predetermined scale, and

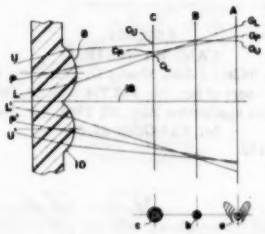
assembling said color photographic base maps together to form said synthesis color photographic map.

4,552,445

FOCUS CONDITION DETECTING DEVICE FOR CAMERAS

Hiromu Mukai, Kawachinagano; Toshihiko Karasaki, and Kunio Kawamura, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1984, Ser. No. 640,771
Claims priority, application Japan, Aug. 16, 1983, 58-149959
Int. Cl.⁴ G03B *3/00*; G01J *1/36*
U.S. Cl. 354—406 **3 Claims**



1. A focus condition detecting device for a camera having an objective lens which forms an object image, said device comprising:

a pair of re-imaging optical systems arranged symmetrically with one another with respect to the optical axis of said objective lens for re-imaging said object image as first and second re-images; and

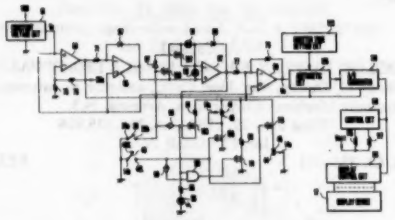
a line sensor arranged optically in front of a plane conjugate with a predetermined focal plane of said objective lens with respect to said re-imaging optical systems and extending in the direction perpendicular to the optical axis of said objective lens so that said first and second re-images are formed thereon, the distance between the corresponding points of said first and second re-images on said line sensor varying with the focus condition of said objective lens.

4,552,446

LIGHT MEASUREMENT COMPENSATION DEVICE FOR CAMERA

Yasuo Suda; Kiyoshi Alyfuku; Akio Sunouchi, and Nobuyuki Suzuki, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1985, Ser. No. 688,178
Claims priority, application Japan, Jan. 7, 1984, 59-1220
Int. Cl.⁴ G03B *7/08*
U.S. Cl. 354—429 **2 Claims**



1. A light measuring device for a camera capable of selecting a full open aperture light measuring mode, a stop-down light measuring mode, an average light measuring mode and a spot light measuring mode, comprising:

(a) light measuring means for producing a corresponding electrical signal to the intensity of an incident light from an object to be photographed; and

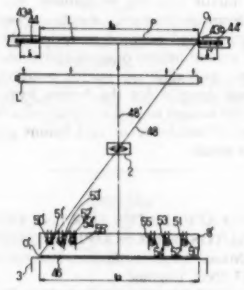
(b) means for shifting an output of said light measuring means by a prescribed quantity when said stop down light measuring mode and the spot light measuring mode are selected.

4,552,447

VARIABLE MAGNIFICATION COPYING APPARATUS WITH MARGIN ERASE

Seiji Sagara, Yokohama, and Yuuji Hasegawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,865
Claims priority, application Japan, Jun. 14, 1982, 57-100775
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **22 Claims**



1. A variable magnification copying apparatus, comprising:

a movable electrostatic photosensitive member;

charging, image exposure, developing and image transfer stations provided around said photosensitive member;

original supporting means for supporting thereon an original to be scanned in a scanning direction;

first erasing means for erasing electric charge of a part of said electrostatic photosensitive member, said first erasing means including a light reflecting member for reflecting light for illuminating the original, said light reflecting

member being provided on a bottom face of said original supporting means at one end and extending in the direction of original scan;

a variable magnification optical system for projecting, at a selected magnification, onto said photosensitive member which has been electrically charged, an image of the original supported on said original supporting means and the light emitted from said first erasing means; and

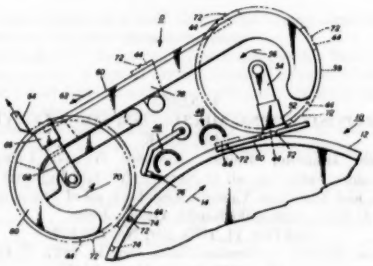
second erasing means for erasing electric charge from a part of said photosensitive member which is adjacent to the area illuminated by the light from said first erasing means, upon the magnification being less than a predetermined magnification.

4,552,448

SHEET TRANSPORT SYSTEM

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1984, Ser. No. 584,036
Int. Cl.[4] G03G *15/01*; B65H *5/08*
U.S. Cl. 355—3 SH **5 Claims**



1. An electrophotographic printing machine of the type having a toner powder image developed on a moving photoconductive member with a sheet being advanced into registration with the toner powder image developed on the photoconductive member, including:

means for transporting the sheet; and

means for detachably coupling said transporting means to the photoconductive member with said transporting means being decoupled from the photoconductive member over a portion of the path of movement to move independently thereof and coupled thereto over a portion of the path of movement thereof to place the sheet in registration with the information developed on the photoconductive member.

4,552,449

COMPOUND IMAGE RECORDING APPARATUS

Kazuhiro Wakamatsu, and Yoshio Kawamata, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,139
Claims priority, application Japan, Oct. 22, 1982, 57-184468
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **11 Claims**

1. An electrophotographic printer for producing a print of compound copied and printed character images by carrying out electrophotographic processes including charging, exposure, positive development and fixing sequentially for a photosensitive printing medium, said printer comprising:

electrophotographic processing means for performing said electrophotographic processes;

an electrically controlled optical switch which controls exposure of said photosensitive printing medium by selectively conducting or interrupting an image of a copy text placed on a text table:

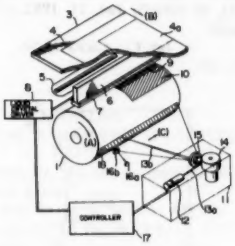
laser beam scanning means for scanning a laser beam in a predetermined direction on said photosensitive printing medium to expose said printing image thereon;

print information storage means for receiving and storing external literal information to be printed;

printing exposure control means for generating signals and for modulating the laser intensity of said laser beam scanning means in accordance with literal information stored in said print information storage means;

frame composing information storage means for receiving and storing external frame composing information for said copying image and printing image;

process sequence control means for controlling the operation of said electrophotographic processing means, and providing positional synchronizing signals when said photosensitive printing medium has predetermined posi-



tional relations with said electrically controlled switch and said laser beam scanning means;

positional information means for receiving said positional synchronzing signals and providing positional information on the positional relations between said photosensitive printing medium and said electrically controlled optical switch and between said medium and said laser beam scanning means; and

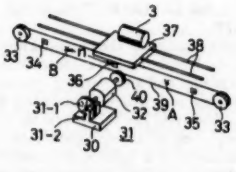
frame composing control means for receiving said frame composing information and said positional information and controlling said electrically controlled optical switch and said printing exposure control means in accordance with said information for enabling exposure of compound copied and printed character images on said photosensitive printing medium in the predetermined direction of laser beam scanning.

4,552,450

VARIABLE MAGNIFICATION APPARATUS WITH LENS POSITION CONTROL

Masahiro Tomosada, Kawasaki; Katsuyoshi Maeshima, Tokyo; Tsuneki Inuzuka, Machida, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,580
Claims priority, application Japan, Aug. 8, 1981, 56-124223
Int. Cl.[4] G03G *15/00*; G03B *27/34*
U.S. Cl. 355—14 R **6 Claims**



1. A copying apparatus comprising:

an optical member;

drive means for driving said optical member in accordance with first and second magnifications, respectively, entered to produce images of various magnifications; and

control means for controlling said driving means to enable the second magnification to be entered during movement of said optical member to a position in accordance with the entered first magnification such that said optical member is positioned for the second magnification without it being first set to the position for the first magnification.

4,552,451

CLEANING DEVICE

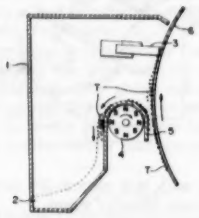
Yoshio Yamazaki, Mizuho, and Takashi Itoh, Tokyo, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 504,035

Claims priority, application Japan, Jun. 21, 1982, 57-105434; Jun. 21, 1982, 57-105435; Jun. 21, 1982, 57-105436; Jun. 22, 1982, 57-106183

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—15 **4 Claims**



1. A cleaning device including a cleaning means for residual magnetic developer on a movable image carrier from said image carrier and a transfer means for magnetically absorbing said magnetic toner developer and transferring and removing it away, characterized in that said transfer means comprises a rotary magnet member and a guide member on the surface of which a shifting field is induced by said rotary magnet member and which covers the surface of said magnet member at least from the part approaching said image carrier to the part on the opposite side where said magnetic developer drops down by its own gravity, said magnet member being rotated in a direction opposite to the moving direction of said image carrier at a position facing said image carrier, and said guide member extending from a position approaching said image carrier to a position on the opposite side with respect to said magnet member along an upper portion of the outer peripheral surface of said magnet member.

4,552,452

DAYLIGHT ENLARGER

George F. A. M. Turner, Blackmore; Michael H. Moore, Ilford, and Ernest J. Twigger, Hornchurch, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

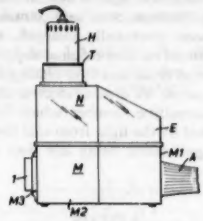
Filed Jul. 5, 1983, Ser. No. 510,700

Claims priority, application United Kingdom, Jul. 7, 1982, 8219622

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—27 **4 Claims**

1. In a daylight enlarger of the enclosed image-framing type which comprises a lamphouse, an enclosed image framing area, a transparency holder and an enlarging lens mounted over the image-framing area and which is enclosed by solid curtain walls having at least one light-tight arm-hole therein, the improvement comprising an actinic light opaque processing dish removably positioned in a light-tight manner in a portion of one of the solid curtain walls in communication with the image framing area, said positioning enabling the dish to be removed from the wall from outside the enlarger and to form part of the curtain wall during exposure, said dish having a movable lid with an upper edge and a lower pivoting edge thereon which



lid can be opened to enable print material to be inserted into said dish and be closed from inside the enclosed image framing area when said dish is positioned in said curtain wall.

4,552,453

LENS POSITIONING MECHANISM FOR A COPYING MACHINE

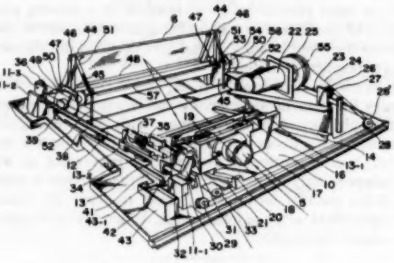
Ken-ichi Iwamoto; Tadaaki Kawano; Hiroaki Uchiyama; Takahiro Fukunaga, all of Nara; Katsuyoshi Fujiwara, Sennan, and Yoshikado Yamada, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1983, Ser. No. 540,659

Claims priority, application Japan, Oct. 14, 1982, 57-181066

Int. Cl.⁴ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **3 Claims**

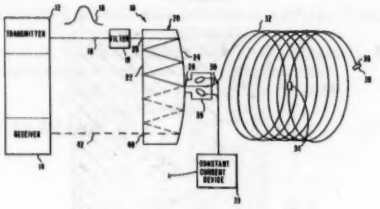


1. A lens positioning mechanism for an electrophotographic copying machine capable of reproducing a copy of an original at a plurality of different magnifications one at a time, said machine comprising an optical apparatus including a lens assembly having a optical axis supported for movement to any one of several operative positions each required for the reproduction of a copy at said respective magnification, a lens mount for the support of a lens assembly a lens carriage supported for movement in a direction close toward and away from a photoreceptor and having a detent positions equal in number to that of the available magnifications, said lens mount being mounted on said lens carriage for movement in a direction perpendicular to said optical axis during movement of said operative positions determined by a respective detent position assumed by said lens carriage said guide means comprising a generally elongated guide extending at a predetermined angle relative to said optical axis, and a guide pin secured to said lens mount and slidingly engaged with said guide.

4,552,454
SYSTEM AND METHOD FOR DETECTING A PLURALITY OF TARGETS

Michael S. Glaser, Redondo Beach, and James R. Rochester, Arcadia, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 8, 1983, Ser. No. 464,823
Int. Cl.[4] G01C *3/08*
U.S. Cl. 356—5 **18 Claims**



1. A test system for a laser rangefinder having signal transmission and reception paths comprising:

an optical structure having a first surface with a focal point thereon and a second surface disposed to receive energy from said signal transmission path and to transfer energy to said signal reception path;

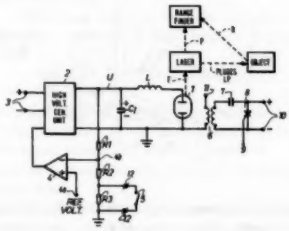
optical waveguide means having a first end at said focal point and a second end with substantially fully reflective means thereon; and

partially reflective means positioned intermediate said first and second optical waveguide ends for reflection of a portion of the energy and for permitting transmission of substantially the remaining portion of the energy to said second end.

4,552,455
METHOD AND APPARATUS FOR FUNCTIONALLY TESTING A LASER RANGEFINDER

Karl H. Johansson, Kungsbacka, and Anders S. Severinsson, Lindome, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE82/00071, § 371 Date Nov. 23, 1982, § 102(e) Date Nov. 23, 1982, PCT Pub. No. WO82/03463, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 16, 1982, Ser. No. 443,917
Claims priority, application Sweden, Mar. 25, 1981, 8101919
Int. Cl.[4] G01C *3/25, 3/00*
U.S. Cl. 356—5 **6 Claims**

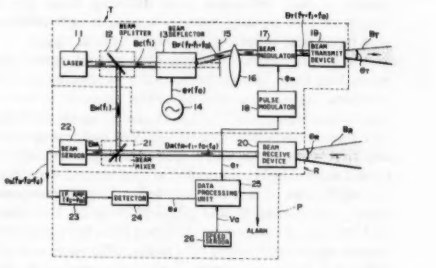


1. A method of functionally testing a laser rangefinder operative in association with a laser adapted for transmitting light pulses, and in which rangefinder is included a flashlamp (1) adapted to respond to high-voltage electrical energy for generating flashes which are transmitted to the laser for initiating transmission of light pulses by the laser, said flashlamp being normally controlled such that said laser generates a normal single pulse in response to each of said light pulses, a capacitor (C1) for accumulating electrical energy for application to the flashlamp, and a controllable high-voltage unit (2) for charging the capacitor (C1) to a selected D.C. voltage (U), said method comprising raising the D.C. voltage (U) supplied by the high-voltage unit (2) to a value high-enough for the laser to be actuated to send two light pulses within a short time interval, as against the normal single pulse, reflecting to said rangefinder at least part of each of said two pulses, and interpreting the reflected parts of the pulses in the rangefinder respectively as a pulse sent from the laser and as a received, reflected pulse.

4,552,456
OPTICAL PULSE RADAR FOR AN AUTOMOTIVE VEHICLE

Hiroshi Endo, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Aug. 26, 1982, Ser. No. 411,813
Claims priority, application Japan, Oct. 31, 1981, 56-173729
Int. Cl.[4] G01C *3/08;* **G01P** *3/36*
U.S. Cl. 356—5 **15 Claims**



1. An optical pulse radar for an automotive vehicle for detecting an object outside of the vehicle, which comprises:

(a) beam transmitting means for generating a coherent beam, splitting the generated beam into a carrier beam B_C and a heterodyne beam B_H, deflecting the carrier beam B_C by a frequency f_0 in response to a high frequency signal e_f to generate a deflected carrier beam B_F modulating the carrier beam B_F to a pulse laser beam B_T with a pulse width t_w in response to a pulse-modulating signal e_m, and transmitting the carrier beam B_T in a predetermined direction at a beam divergence angle B_T;

(b) beam receiving means for receiving the beam transmitting from said beam transmitting means and reflected from the object and mixing the received beam B_R with the herterodyne beam B_H, and superheterodyning the mixed beam into a corresponding electrical interference beat signal e_b;

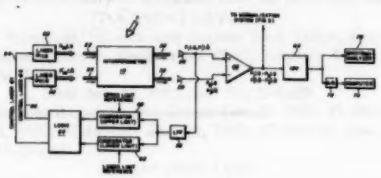
(c) beat signal processing means connected to said beam transmitting means and said beam receiving means for amplifying the beat signal e_b falling within a predetermined frequency bandwidth to generate a detection signal e_d and calculating information with respect to the object on the basis of the trigger signal e_t and the detection signal e_d.

4,552,457

FIBER OPTIC INTERFEROMETER USING TWO WAVELENGTHS OR VARIABLE WAVELENGTH

Thomas G. Giallorenzi, 8704 Side Saddle Rd., Springfield, Va. 22152; Sang K. Sheem, 3105 Tam O'Shanter Dr., Richardson, Tex. 75080, and Henry F. Taylor, 7839 Midday La., Alexandria, Va. 22306

Filed Feb. 1, 1983, Ser. No. 462,860
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—345 **19 Claims**



19. A physical sensor comprising:

input optical signal means for generating an input optical signal including a first coherent light component at a first wavelength and a second coherent light component at a second wavelength, said first and second wavelengths differing by a wavelength difference;

a Mach-Zehnder interferometer including an input port, an output port, a sensing light path, transducer means coupled to said sensing path for modulating the phase of light signals passing through said sensing path in response to a physical quantity, and a reference light path, the path length of said reference path differing from the path length of said sensing path by a path length difference, said input port receiving said input optical signal;

detector means coupled to receive an output optical signal emanating from said output port for producing an output electrical signal proportional to the intensity of said output optical signal, said output electrical signal including a first signal component due to said first light component at said first wavelength and a second signal component due to said second light component at said second wavelength, the amplitudes of said first and second signal components being proportional to said physical quantity, the phase of said first signal component differing from the phase of said second signal component by a phase difference, said phase difference being proportional to said wavelength difference and said path length difference;

phase difference adjustment means comprising wavelength control of said first and second wavelengths for adjustment of said wavelength difference; and

comparator means for distinguishing and comparing said first and second signal components;

whereby said phase difference may be adjusted such that the sensitivities of said first and second signal components to said physical quantity are never simultaneously at a minimum.

4,552,458

COMPACT REFLECTOMETER

Alan J. Lowne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,729
Int. Cl.[4] G01N *21/47*
U.S. Cl. 356—446 **8 Claims**

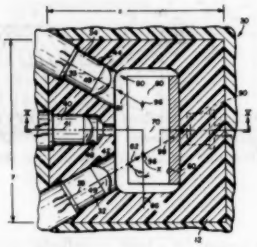
1. A compact reflectrometer for providing quantitative measurement of reflection densities, said reflectometer comprising

means for supporting a generally planar test element in a predetermined plane, contacting the reflectometer,

planar means on a major exterior surface of the reflectometer for orienting said predetermined plane generally horizontally when said planar means is placed on a rest surface,

a light source constructed to project a beam of light centered on an axis of illumination,

light detector means constructed to receive light centered on an axis of detection, said light source and said detector means being disposed with said axes each being generally parallel to said planar orienting means of the reflectometer,



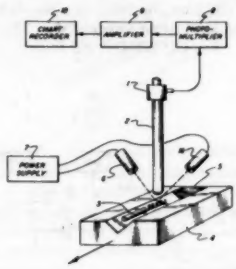
and reflecting means for (a) reflecting light from said source to a predetermined location in said predetermined plane, said source light traveling from said reflecting means along a first path; and (b) reflecting to said detector means only light that is diffusely reflected from a test element at said predetermined location in said predetermined plane, such diffusely reflected light traveling from said reflecting means along a second path; said reflecting means, light source, and detector means being three dimensionally disposed so that said first and second paths do not lie in a common plane.

4,552,459

SURFACE REFLECTIVITY DEVICE AND METHOD

Matthew S. Brennensholtz, Waterloo, and Robert L. Donofrio, Elbridge, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,902
Int. Cl.[4] G01N *21/48*
U.S. Cl. 356—448 **2 Claims**



1. A method for measuring surface reflectivity of a coiled wire sample having a plurality of turns, the method comprising:

placing the sample under a microscope having a field of view smaller than the wire diameter;

illumnating the sample;

focusing the microscope upon a portion of the surface of a single turn of the sample;

scanning the sample with the microscope to cause the field of view of the microscope to move successively from the

surface of one turn to another, to successively collect the reflected light from such scanned surfaces;

continuously sensing the intensity of the successively collected reflected light and converting it to electrical signals proportional to the varying intensity of the reflected light; and

comparing the average peak values of such varying reflected intensity with a standard value to obtain a ratio.

4,552,460

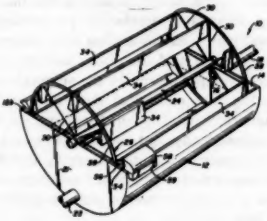
BUCKET-LIFT SLURRY STORAGE APPARATUS AND METHOD

Norman R. Wallace, Walnut Creek, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Sep. 30, 1983, Ser. No. 537,623

Int. Cl.[4] B01F *15/02, 7/02*

U.S. Cl. 366—196 **25 Claims**



1. A slurry handling apparatus comprising: a tank having a fluid inlet and a fluid outlet, whereby a slurry containing particles in suspension can be directed into and out of the tank; a plurality of buckets; means coupled with the tank for mounting the buckets on the tank for movement along a path extending into the tank and into proximity to the bottom of the tank to allow the buckets to scoop slurry particles settled in the tank off the bottom and in an upward direction, the buckets being pivotal relative to the tank; means adjacent to said path for pivoting the buckets to cause the buckets to deposit the particles scooped thereby back into the tank; and means coupled with said bucket mounting means for moving the buckets along said path as a function of the rate at which particles gravitate toward said bottom.

4,552,461

STIRRER FOR STIRRING NEAR A VESSEL WALL

Karl-Erich Ott, and Thomas Behrens, both of Hamburg, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,162

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332069

Int. Cl.[4] B01F *7/18, 7/24, 7/32*

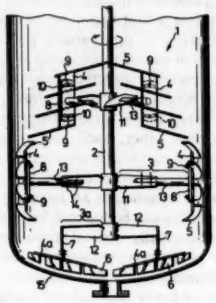
U.S. Cl. 366—279 **11 Claims**

1. A stirrer for stirring near a vessel wall and for directing stirred material toward a vessel drain, the stirrer having a drive shaft, stirrer arms, plates and stirring elements,

each stirrer arm being radially arranged on and supported by the drive shaft,

each plate being secured to a stirrer arm at a position near the vessel wall and supporting a plurality of stirring elements, and

each stirring element being secured to a plate, being positioned between the plate and said vessel wall, having a leading edge, being separated from each other stirring element secured to the same plate and being inclined to direct stirred material toward the vessel drain, the stirring elements attached to a given plate being displaced from each other in the direction of revolution so that the leading edge of each successive stirring element in the direction of the vessel drain and on a plate is behind that of the



immediately preceding stirring element in said direction of revolution.

4,552,462

STIRRER APPARATUS FOR PAPER STOCK

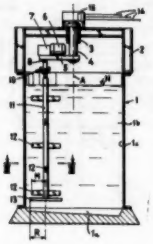
Hans Schnell, Mengen, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,786

Claims priority, application Switzerland, Nov. 1, 1982, 6338/82; Feb. 7, 1983, 666/83

Int. Cl.[4] B01F *7/30*

U.S. Cl. 366—280 **20 Claims**



1. A stirrer apparatus for paper stock, comprising:

a container for receiving paper stock therein;

at least one vane shaft arranged within said container;

said vane shaft being provided with protruding agitation elements;

drive means including a drive shaft for driving said vane shaft so as to travel along a substantially circular-shaped path of travel about a central axis;

pivotable coupling means for suspending said vane shaft at said drive shaft so as to carry out random pendulum-like movements essentially over the entire cross-section of said container; and

said vane shaft having a lower end devoid of any mounting arrangement therefor.

4,552,463

METHOD AND APPARATUS FOR PRODUCING A COLLOIDAL MIXTURE

Harry Hodson, 4730 Dunn Dr., Sarasota, Fla. 33583

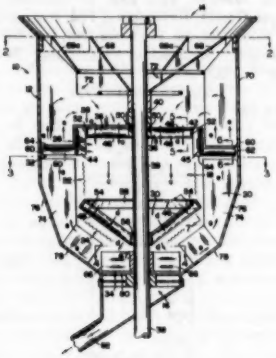
Filed Mar. 15, 1984, Ser. No. 589,714

Int. Cl.[4] B01F *7/20*

U.S. Cl. 366—295 **7 Claims**

1. An apparatus for producing a colloidal mixture of a high degree of hydration comprising a hollow enclosure having a

feed inlet to receive a product to be colloidalized and a discharge outlet to dispense the colloidal mixture comprising a thrust generating assembly including a down thrust generating component including a first upper set of down thrust blades comprising a plurality of substantially horizontal first upper down thrust blades in spaced relationship relative to each other to generate a downwardly directed vector and a second upper set of down thrust blades comprising a plurality of substantially vertical second upper down thrust blades in spaced relationship relative to each other, each said substantially vertical second upper down thrust blades attached to the outer portion of one of said plurality of substantially horizontal first upper down thrust blades to generate an inwardly directed vector such that said substantially horizontal first upper down thrust blades and said substantially vertical second upper down thrust blades cooperatively form a downwardly moving inner cylindrical liquid mass and a lower set of down thrust blades comprising a plurality of lower down thrust blades in spaced relationship relative to each other, the plane of each said lower down thrust blade being inclined relative to said plurality of substantially horizontal first upper down thrust blades to direct said downwardly moving inner cylindrical liquid mass outwardly and downwardly relative to said hollow enclosure; the upper portion of said lower down thrust blades being disposed



substantially in the same vertical plane as the longitudinal center line of said plurality of substantially vertical second upper down thrust blades and an up thrust generating component including an upper set of up thrust blades comprising a plurality of substantially horizontal upper up thrust blades in spaced relationship relative to each other, each of said plurality of substantially horizontal upper up thrust blades being coupled to one of said substantially vertical second upper down thrust blades outwardly of said plurality of substantially horizontal first upper set of down thrust blades to generate an upwardly directed vector and a lower set of up thrust blades comprising a plurality of substantially vertical lower up thrust blades in spaced relationship relative to each other disposed adjacent to the lower portion of said lower set of down thrust blades to generate an outwardly and upwardly directed vector such that said substantially horizontal upper up thrust blades and said substantially vertical lower up thrust blades cooperatively form an upwardly moving outer cylindrical liquid mass disposed outwardly from said downwardly moving inner cylindrical liquid mass whereby said concentrically disposed cylinders of liquid mass move in opposite directions relative to each other within said hollow enclosure such that the interface between said moving liquid masses cooperatively form a liquid shear zone to impart a high energy shearing therebetween to produce a hydrated colloidal mixture.

4,552,464

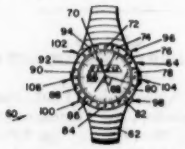
ANALOGUE DIAL CALCULATOR/WRIST WATCH

Scott A. Rogers, 6510 Patterson Ave., Richmond, Va. 23226

Filed Jul. 17, 1984, Ser. No. 631,749

Int. Cl.[4] G04B *47/00*

U.S. Cl. 368—10 **9 Claims**



1. A calculator watch having an analog dial face including a watch housing, calculator means for performing numerical calculations, said watch having analog hour designations positioned uniformly about said dial face, said calculator means including numerical input means for the numerals zero through nine, for entering like numerical data into said calculator means, said numerical input means for numerals one through nine being positioned adjacent their respective identical numerical hour designations about said analog watch face and a zero numerical input means positioned adjacent either the ten o'clock, eleven o'clock or twelve o'clock positions on said analog watch face.

4,552,465

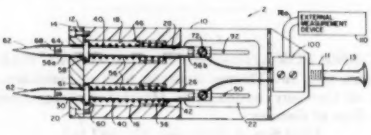
TWO-POINT SPRING LOADED THERMOCOUPLE PROBE WITH REPLACEABLE TIPS

Albert R. Anderson, Export, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 10, 1984, Ser. No. 569,720

Int. Cl.[4] G01K *1/14, 7/00*

U.S. Cl. 374—179 **19 Claims**



1. A thermocouple probe device for use in measuring the temperature of a metal comprising:

(a) a housing;

(b) two parallelly spaced apart elongated thermocouple elements respectively slidably received in said bores in said housing;

(c) a first end portion detachably secured respectively to a first end of each of said thermocouple elements extending from said housing;

(d) bias means engaging said thermocouple elements and said housing to resiliently mount each of said thermocouple elements in said housing; and

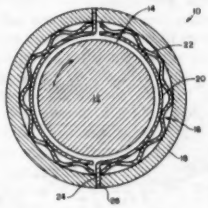
(e) detachable means to secure leads to a second portion of each of said thermocouple elements, said detachable means further comprising means to inhibit rotation of said thermocouple elements in said housing to thereby facilitate removal of one of said first end portions from the remainder of said thermocouple element.

4,552,466

COMPLIANT HYDRODYNAMIC FLUID JOURNAL BEARING

Edward L. Warren, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 24, 1984, Ser. No. 603,374
Int. Cl.⁴ F16C *32/06*
U.S. Cl. 384—103 **8 Claims**



1. In a complaint hydrodynamic journal bearing of the type wherein a rotating shaft is supported in a bore extending through a cartridge sleeve, a plurality of pad assemblies having no bump blocks circumferentially spaced around said shaft adjacent to said sleeve, each of said pad assemblies comprising

a member having a bearing surface facing said shaft mounted between said shaft and said cartridge sleeve,

a compliant element having a plurality of spaced resilient projections for engaging said member to support the same without being secured thereto positioned between said member and said cartridge sleeve,

at least one projection on an end of said member in the direction of rotation of said shaft, said projection having one surface facing in said direction of rotation and another surface facing in an opposite direction, and

restraining means on said sleeve for engaging at least one of said surfaces whereby movement of said member is restricted to a direction normal to said shaft thereby inhibiting destructive bending moments within said member during rotation of said shaft, said restraining means comprising

at least one protrusion extending from an edge of the bore of said cartridge sleeve, and

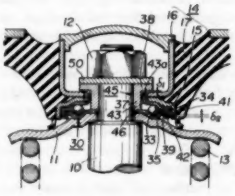
said projection extends outwardly from an end of said member in a direction parallel to said bore and has one surface in engagement with said protrusion.

4,552,467

ROLLING BEARINGS FOR STRUT-TYPE SUSPENSIONS

Kenji Takei, Hiratsuka, and Yukihiro Akabane, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,519
Claims priority, application Japan, Jul. 15, 1983, 58-109640[U]
Int. Cl.⁴ F16C *19/10, 33/58*
U.S. Cl. 384—615 **4 Claims**



1. An angular contact bearing for a vehicle strut-type suspension formed of a shock absorber having an extensible piston rod, a rubber buffer mount attached to the vehicle having an upper plate, and an upper seat for receiving a coil spring, the bearing comprising:

a rotary bearing race fixedly mountable on the piston rod together with the upper seat of the shock absorber for receiving the coil spring;

a first cylindrical portion disposed at the radially inner part of the rotary bearing race, and having a radially outwardly extending flange at one axial end thereof;

a stationary bearing race fixed to the rubber mount, the stationary bearing race having a radially innermost part which confronts the outer face of the first cylindrical portion of the rotary bearing race;

a second cylindrical portion disposed at the radial outer part of the stationary race and having a radially inwardly extending flange disposed at one axial end thereof;

a plurality of bearing balls disposed between the rotary bearing race and the stationary bearing race;

the outwardly extending flange of the rotary bearing race being disposed axially above the upper plate such that the outwardly extending flange and the upper plate overlap each other with a first axial clearance;

the inwardly extending flange of the second cylindrical portion of the stationary bearing race being disposed axially under the radially outer part of the rotary bearing race such that the rotary bearing race and the stationary bearing race overlap each other with a second axial clearance;

wherein the rotary bearing race, the stationary bearing race and the plurality of ball bearings are assembled as a non-separable shell type ball bearing such that said first cylindrical portion of the rotary bearing can fixedly accommodate the piston rod of the shock absorber, the stationary bearing race can be fixed to the body of the motor vehicle and at least one of the radially outwardly extending flange and the portion of the upper plate confronting the radially outwardly extending flange is fabricated of a material having self-lubricating characteristics; and

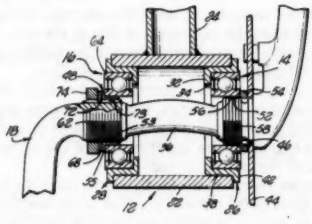
wherein the first axial clearance between the outwardly extending flange of the rotary bearing race and the upper plate of the rubber buffer mount is set smaller than the second axial clearance between the radially inwardly extending flange of the second cylindrical portion of the stationary bearing race and the radially outer end portiion of the rotary bearing race.

4,552,468

BICYCLE SEALED BEARING KIT

Willard C. Hopper, Jr., 4850 Trail, Norco, Calif. 91760

Filed Feb. 17, 1982, Ser. No. 349,617
Int. Cl.⁴ F16C *9/02*
U.S. Cl. 384—458 **1 Claim**



1. A bicycle sealed bearing unit kit for installing sealed bearing units on a bicycle having a one-piece crank comprising:

a pair of bearing mounting elements each formed of a cylindrical collar having a flange formed at one end thereof;

said flange being integrally formed with said collar and extending outwardly in a plane perpendicular to said collar axis;

said bearing mounting elements each having threads formed on the inner surface thereof for enabling said elements to be secured to said crank and wherein a conventional sealed bearing unit is mounted on each of said collars, and wherein one end of each bearing unit is juxtaposed with one of said flanges of said element;

the inner diameter of one of said element collars being smaller than the inner diameter of the collar of said other element, for enabling the element collar having a greater diameter to pass over the portion of said crank to which said element collar having a smaller diameter is secured.

4,552,469

INK DOT PRINTER

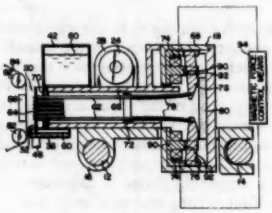
Takeyoshi Tsuge; Yoshihiro Torisawa; Ayumu Makino, all of Mishima, and Tsutomu Kimura, deceased, late of Mishima, all of Japan (by Shizuko Kimura, legal representative), assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,368

Claims priority, application Japan, Jun. 10, 1983, 58-103958; Jun. 22, 1983, 58-112237; Jun. 22, 1983, 58-112241

Int. Cl.[4] B41J *3/12, 27/18*

U.S. Cl. 400—119 **17 Claims**



1. An ink dot printer comprising:

a means for storing magnetic ink;

a pair of magnetic pole plates arranged opposite to each other to form a slit whose one end is immersed in the magnetic ink supplied from the magnetic ink storing;

a magnetism generating means for magnetizing the paired magnetic pole plates to introduce the magnetic ink supplied from the magnetic ink storing means into the slit to form a magnetic ink film therein;

a plurality of needles arranged adjacent to one another along the longitudinal direction of the slit which each is freely movable in its longitudinal direction between a first position where its one end portion is immersed in the magnetic ink film in the slit formed by the paired magnetic pole plates and a second position where its one end portion is projected from the magnetic ink film in the slit;

a driving means for selectively driving the needles to move from the first position to the second position;

a space forming means for separating the end faces of the one end portions of the needles, which have been located at the second position, from a recording paper on a platen by a distance greater than the thickness of the magnetic ink on each of the end faces; and

a magnetic ink flying means for flying the magnetic ink from the end faces of the one end portions of the needles, which have been located at the second position, onto the recording paper on the platen to force the magnetic ink on the recording paper on the platen to form dots of magnetic ink thereon;

wherein symbols such as characters or numerals can be printed on the recording paper by the groupings of dots of the magnetic ink.

4,552,470

THERMAL TRANSFER COLOR PRINTER FOR PRINTING ON SHEETS OF PAPER

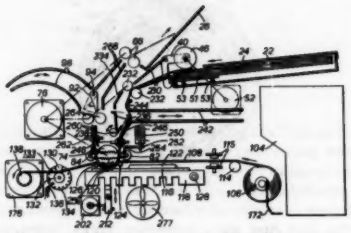
Masasumi Yana; Hitoshi Nagato, both of Yokohama; Kiyoshi Yamada, Tokyo; Shyoji Ueno, and Kunihiro Shibuya, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 22, 1983, Ser. No. 554,319

Claims priority, application Japan, Nov. 24, 1982, 57-204526

Int. Cl.[4] B41J *3/20*

U.S. Cl. 400—120 **10 Claims**



1. A thermal transfer color printer for printing a color image on individual separate sheets of a recording medium comprising:

supply means for storing sheets of recording medium and supplying one sheet at a time into said thermal transfer color printer;

a reversible platen roller rotatably supported in said thermal transfer color printer to transport a single sheet of said recording medium received from said supply means;

first and second pinch rollers, each rotatably supported adjacent said reversible platen roller at opposite sides thereof to press the sheet of recording medium against the surface of said reversible platen roller;

first guide means for guiding the sheet of recording medium from said supply means to said reversible platen roller so that it is gripped by said reversible platen roller and said first pinch roller;

a multicolored ink ribbon supported to move across said platen roller with one face of said ink ribbon forming a guide for transporting the sheet of recording medium along the surface of said platen roller, said ink ribbon having a plurality of color segments successively arranged along its length;

a thermal printhead having thermal elements selectively energized by color component electrical signals representing the color image to be printed on the sheet of recording medium, said printhead supporting said ink ribbon at a position facing the surface of said platen roller;

printhead moving means for selectively moving said thermal printhead up and down so that, in the up state, the printhead presses said ink ribbon and the sheet of recording medium onto the surface of said platen roller for thermally transferring colored ink from the ink ribbon onto the sheet of recording medium when said thermal elements are energized and, in the down state, said thermal printhead provides a guide path for the sheet of recording medium between said ink ribbon and the surface of the platen roller;

platen roller drive means for driving said reversible platen roller in a first direction to load the sheet of recording medium in said thermal transfer color printer;

pinch roller shift means for shifting said first pinch roller toward the surface of said platen roller during a first loading time period to retain the sheet of recording medium on the surface of said platen roller to enable said platen roller to feed the sheet of recording medium to said second pinch roller, said pinch roller shift means shifting

said first pinch roller away from the surface of said platen roller during a second loading time period to disengage said first pinch roller;

slack removing means positioned along said first guide means for applying a force to the sheet of recording medium during the second loading time period to remove slack from the sheet of recording medium, said pinch roller shifting means shifting said first pinch roller back toward the surface of said platen roller to again retain the sheet of recording medium after slack is removed during the second loading time period;

ink ribbon drive means for transporting said multicolored ink ribbon in the first direction, said platen roller drive means further transporting the sheet of recording medium in the first direction at substantially the same rate as said ink ribbon, said platen roller drive means also including reverse drive means for transporting the sheet of recording medium in a reverse direction, said platen roller drive means transporting the sheet of recording medium a limited distance to maintain contact between the sheet of recording medium and at least one of said first and second pinch rollers during movement in the first and reverse directions; and

electrical circuit means connected to said thermal printhead for supplying the color component electrical signals to said thermal elements while the sheet of recording medium is transported in the first direction.

4,552,471

PRINT HEAD WITH PERMANENT MAGNETIC BIAS

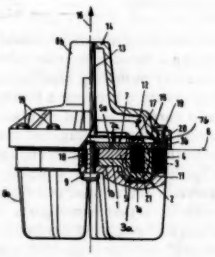
Bernd Gugel, Ulm-Einsingen, and Harald Niebel, Senden, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 21, 1983, Ser. No. 553,826

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1982, 3243477

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **9 Claims**



1. In a print head for operating and containing elongated styli, the combination comprising

a coil carrier having along its periphery upwardly bent yoke legs in integral configuration, each having a front end face, all the front end faces being situated in a common plane;

a permanent magnet arranged centrally on the coil carrier and having an outer surface being coplanar with said front end faces of said yoke legs;

a magnetizable cover plate arranged in abutment with said faces in a plane defined by said coplanarity;

said magnetizable cover plate having aperture means adjacent the respective armatures for interrupting the magnetic flux, the apertures being filled with a nonmagnetizable material;

a plurality of coils respectively arranged around said yoke legs underneath said cover plate; and

a plurality of armatures resiliently mounted on top of said cover plate and having a first portion juxtaposed to said coils and a second portion for respectively carrying a print stylus.

4,552,472

INK DOT PRINTER

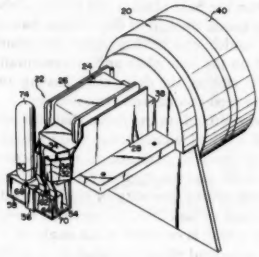
Takeyoshi Tsuge; Yoshiro Torisawa; Ayumu Makino, all of Mishima, Japan, and Tsutomu Kimura, deceased, late of Mishima, Japan (by Shizuko Kimura, legal representative), assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,361

Claims priority, application Japan, Jun. 10, 1983, 58-103958; Oct. 17, 1983, 58-193825; Oct. 24, 1983, 58-199450; Oct. 31, 1983, 58-205619; Nov. 4, 1983, 58-207161; Nov. 15, 1983, 58-214407

Int. Cl.⁴ B41J *3/12, 27/18*

U.S. Cl. 400—124 **22 Claims**



1. An ink dot printer, comprising:

elongate magnetic ink storing means having a magnetic ink supplying hole and an air opening;

a pair of magnetic pole plates arranged opposite to each other to form a slit one end of which is arranged to be immersed in magnetic ink stored in the magnetic ink storing means;

magnetism generating means for selectively magnetizing the pair of the magnetic pole plates to introduce the magnetic ink stored in the magnetic ink storing means into the slit to form a magnetic ink film in the slit;

a plurality of needles arranged adjacent to one another along the longitudinal direction of the slit and each freely movable in its longitudinal direction between a first position where one end portion of each needle is immersed in the magnetic ink film in the slit formed by said pair of magnetic pole plates, and a second position where said one end portion is projected from the magnetic ink film;

driving means for selectively driving the needles to move them from the first position to the second position, wherein the selected needles force the magnetic ink as adhered on said one end portions at the first position, onto a recording paper to form dots of the magnetic ink on the paper so that characters can be printed by grouping of the dots;

an ink cartridge arranged to be detachably mounted on the magnetic ink storing means to communicate magnetic ink contained in the cartridge into said magnetic ink supplying hole; and

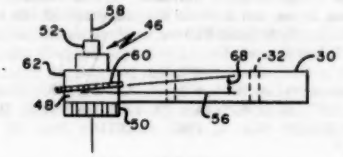
a magnet associated with the magnetic ink storing means, said magnet being in operative relation to a bottom end of the slit formed by said pair of magnetic pole plates and at a position along the longitudinal direction of the slit, for returning magnetic ink remaining in the slit to the magnetic ink storing means when the magnetism generating means ceases to magnetize said pair of magnetic pole plates.

4,552,473

RIBBON FEED MECHANISM

Stephen M. Pawlak, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 15, 1984, Ser. No. 660,662
Int. Cl.[4] B41J *35/28, 33/24*
U.S. Cl. 400—208 **4 Claims**



1. A ribbon feed mechanism for printing machines, the ribbon feed mechanism includes a base plate, a take-up spool rotatably mounted on the base plate, a roll of film ribbon supported on the take-up spool, the roll of film ribbon having a predetermined ribbon width and having outer convolutions, a drive shaft mounted on the base plate and incrementally rotated for feeding the film ribbon, the drive shaft having an axis of rotation, the ribbon feed mechanism comprising:

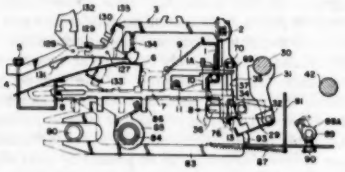
a toothed wheel fixed on the drive shaft for rotatiion therewith, said toothed wheel comprising means for rotating the take-up spool in response to incremental rotation of the drive shaft, said toothed wheel comprising a generally circular disc with a plurality of teeth extending from the circumference of said disc, the teeth all being located in a first plane which is oriented at an angle of 3° to 10° with respect to a second plane perpendicular to the axis of said drive shaft, the angular mounting of said toothed wheel comprising means for causing the teeth on said toothed wheel to penetrate the outer convolutions of the film ribbon at varying locations relative to the predetermined ribbon width.

4,552,474

BACKSPACE DEVICE IN TYPEWRITER

Giancarlo Horeschi, and Gian P. Barozzi, both of Tokyo, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 287,692, Jul. 28, 1981, abandoned. This application Nov. 9, 1983, Ser. No. 550,291
Claims priority, application Japan, Aug. 11, 1980, 55-110952
Int. Cl.[4] B41J *19/62*
U.S. Cl. 400—310 **3 Claims**



1. A backspace device in a typewriter comprising:

an interposer operable by the operation of a key lever:

a cycle bail operable by said interposer;

a cycle clutch for intermittently transmitting a driving force from a driving source to a main shaft so that the main shaft can be rotated by a predetermined number of times in association with said cycle bail;

an actuating bail for performing a cycle of a motion along a moving path of a predetermined mode by a full turn of said main shaft, while rendering to said interposer a motion in a direction of said interposer leaving the cycle bail during said motion;

a backspace link for moving in association with said interposer during the leaving motion of said interposer;

a backspace rack extending laterally of the typewriter, supported rotatably about an axis laterally disposed and turned to a working position by said backspace link; and

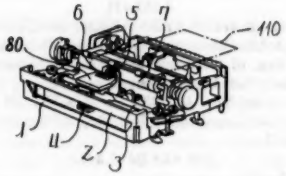
a backspace pawl fastened onto a carriage so that said backspace pawl can be reciprocated a predetermined distance in the lateral direction by a cam rotatable integrally with the main shaft and having a toothed portion to be meshed with said backspace rack rotated to said working position; characterized in that the carriage is retracted by a predetermined value of pitch along the main shaft by a reaction force generated at a portion of the engagement of the backspace pawl with the backspace rack by a motion of the backspace pawl.

4,552,475

PRINTER CARRIAGE AND HAMMER ASSEMBLY

Masayuki Suzaki, Fugisawa, and Tetuo Kanno, Atsugi, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 201,375, Oct. 27, 1982, abandoned. This application Nov. 10, 1982, Ser. No. 440,626
Claims priority, application Japan, Oct. 30, 1979, 54-150421[U]
Int. Cl.[4] B41J *1/24*
U.S. Cl. 400—144.2 **9 Claims**



1. A printer comprising:

a frame;

a carrier reciprocatably mounted on said frame;

a carriage having a detachable print wheel; and

means for pivotally mounting said carriage on said carrier for selective pivoting between a first operational position wherein said carriage is held in place and a second released position for exchanging said print wheel; wherein

said carriage furthe comprises an engaging pin;

said carrier further comprises a movable piece resiliently mounted thereon and at least one reference surface;

said movable piece further comprises a first tapered surface for contacting said engaging pin to displace said movable piece when said carriage is pivoted toward said first position and a second tapered surface for forcing said engaging pin against said at least one reference surface when said carriage is in said first position during operation of said printer to restrain movement of said carriage with respect to said carrier; and

wherein holding and releasing of said carriage with respect to said carrier may easily be achieved by engaging said carriage and moving said carriage.

4,552,476

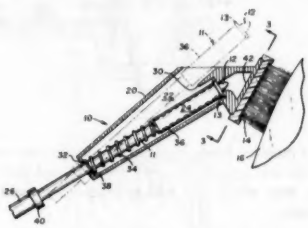
COMBINATION HIGH PRESSURE WAND AND BRUSH FOR VEHICLE WASHING

Patrick T. Heraty, and Michael Heraty, both of 12023 S. 76th Ave., Palos, Ill. 60463

Filed Mar. 8, 1984, Ser. No. 587,360
Int. Cl.[4] A46B *11/02, 11/06*
U.S. Cl. 401—136 **6 Claims**

1. A combination brush-wand washing unit for cleaning an object comprising:

a high-pressure wand having a nozzle;
a housing through which the said high-pressure wand may project;
a brush mounted on the housing; and
means for allowing the wand to be moved between a first position wherein said wand and its nozzle projects from the housing with the nozzle at a distance from the housing

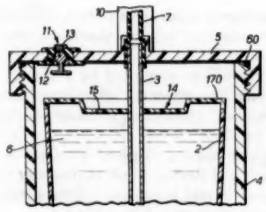


and brush for emitting a stream of high-pressure liquid therefrom, and a second position wherein the wand nozzle is within the housing such as to direct its flow to and through the brush,
whereby the user may alternatively and selectively use the unit as a cleaning high-pressure wand close to the object without fear of the housing or brush hitting or scraping the object or as a liquid flowing brush.

4,552,477
APPARATUS FOR FEEDING A LIQUID TO AN APPLICATOR

John D. Braithwaite; Derrick O. King, both of Berkshire, and Sidney J. Williams, Surrey, all of England, assignors to Black & Decker Inc., Newark, Del.

PCT No. PCT/GB79/00131, § 371 Date Apr. 9, 1980, § 102(e) Date Apr. 9, 1980, PCT Pub. No. WO80/00315, PCT Pub. Date Mar. 6, 1980
PCT Filed Aug. 3, 1979, Ser. No. 194,452
Claims priority, application United Kingdom, Aug. 9, 1978, 32726/78
Int. Cl.⁴ B43K *5/02*
U.S. Cl. 401—188 R **5 Claims**

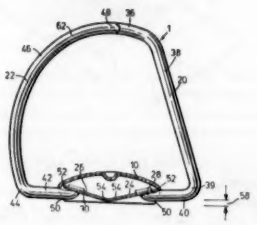


1. A portable apparatus for feeding liquid under pressure to an applicator, comprising:
a vessel;
a liquid container received, in use, within the vessel;
a pressurizing assembly supported on the vessel and including a housing having a capsule of pressurized gas and further having pressure reducing means therein, the pressure reducing means having a high pressure side and a low pressure side;
a first fluid path extending from the high pressure side of the pressure reducing means and communicating with the outlet of the pressurized gas capsule;
a second fluid path extending from the low pressure side of the pressure reducing means through the vessel and into the container;
a feed conduit for transferring liquid from the container to an applicator;
the feed conduit passing through the top of the vessel and the top of the container to a location adjacent the bottom of the container; and
the portion of the top of the container through which the feed conduit passes being in the form of a diaphragm, the diaphragm closing over the junction between the container wall and the feed conduit.

4,552,478
RING MECHANISM

Lewis Cohen, Toronto, Canada, assignor to Double-W Stationery Corporation, Weston, Canada

Filed Jul. 12, 1984, Ser. No. 630,138
Int. Cl.⁴ B42F *3/04, 13/26*
U.S. Cl. 402—39 **26 Claims**



1. A ring mechanism for mounting on a loose leaf binder having at least one generally planar cover member and including ring elements moveable between open and closed positions so that paper having ring holes spaced inwardly from an edge thereof can be retained on the ring elements in said binder, the mechanism comprising: a resilient cover rail having turned in side edges and apertures at its said edges; a first carrier rail, for carrying first ring elements; at least one first ring element, the or each of which is mounted at a first end thereof on the first carrier rail extending through a respective aperture in the cover rail, and includes a second end formed as a mesh end and a first, bottom portion extending from the first end thereof to a first intermediate location, which, in use in the closed position, is spaced further from a binder cover member than the first end thereof, the first bottom portion being arranged to receive and support paper below the top of the cover rail and adjacent a binder cover member; a second carrier rail for second ring elements, the first and second carrier rails being nested in side by side relationship between side edges of said cover rail, the combined width of the carrier rails being greater than the width between said side edges when said cover rail is unstressed, whereby the carrier rails may be moved between an over centre open position and an over centre closed position; at least one second ring element, the or each of which is mounted at a first end thereof on the second carrier rail extending through a respective aperture in the cover rail and and includes a second end formed as a mesh end adapted to mesh with the mesh end of a first ring element, a second bottom portion extending from the first end thereof to a second intermediate location, which, in use in the closed position is spaced further from a binder cover member than the first end thereof, the second bottom portion being arranged to receive and support paper below the top of the cover rail adjacent a binder cover member, with the first and second ring elements defining a closed loop with their mesh ends meshing with one another when said carrier rails are in said closed over centre position, and said mesh ends of the first and second ring elements being spaced from one another when said carrier rails are in the open over centre position; and mounting means for mounting the cover rail to a binder cover member so that the first ends of the

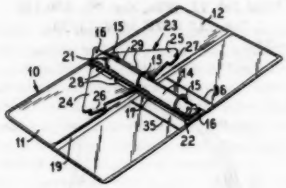
ring elements are spaced above the cover member, whereby clearance for movement of the ring elements between open and closed positions is provided by the spacing of said first ends from the cover member and by the greater spacing of said intermediate locations from the cover member in the closed position, as compared to the first ends of the ring elements.

4,552,479

EASEL TYPE BINDER

Hy Nickow, Lincolnwood; Martin A. Nickow, Highland Park, and Harold G. Rowlett, Chicago, all of Ill., assignors to General Loose Leaf Bindery Co., Inc., Chicago, Ill.

Filed Jan. 6, 1984, Ser. No. 568,618
Int. Cl.[4] B42F *13/22, 3/04;* B42D *3/16*
U.S. Cl. 402—74 **5 Claims**



1. An easel-type loose leaf binder comprising:
a front panel,
a rear panel,
a central panel disposed between said front panel and said rear panel, with fold lines running longitudinally the full length of said front and rear panels adjacent said central panel to permit said front and rear panels to be folded into a binder-closed position, together with a transversely extending fold line extending across said front, rear and central panels to permit an upper portion of each panel to be folded back into an easel providing position,
a rigid frame,
a plurality of split ring mechanisms in longitudinally spaced relation along said rigid frame,
relatively flexible backing strip located behind said rigid frame,
first securing means securing a portion of said backing strip above said transversely extending fold line to said rigid frame alone,
second securing means securing a portion of said backing strip above said transversely extending fold line to both said rigid frame and said central panel,
a flap-carrying member secured to said central panel above said transversely extending fold line, said flap-carrying member including spaced relatively rigid flaps foldable longitudinally with respect to said flap-carrying member, into upright positions, each flap having a locking tab formed therein, said backing strip having spaced slots therein proportioned to receive said locking tabs in spaced relation when said binder is in its easel providing position to thereby rigidify the binder in its easel providing position.

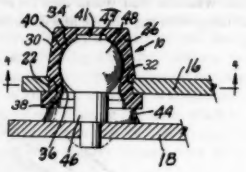
4,552,480

BALL JOINT STRUCTURE

Allan E. McIntyre, LaPorte, Ind., assignor to Sprague Devices, Inc., Michigan City, Ind.

Filed Jun. 29, 1984, Ser. No. 626,236
Int. Cl.[4] F16C *11/06*
U.S. Cl. 403—76 **5 Claims**

1. A ball joint structure for connecting a drive link and the free end of a pivotally mounted crank arm, comprising a socket member having a cavity including a part-spherical portion, a restricted neck portion and a flexible flaring skirt portion extending from the mouth of said cavity, means detachably mounting said socket member on said link in a manner restrained against rotation, and a ball carried by the free end of said crank arm, the restricted neck of said socket member having an inner diameter smaller than the diameter of said ball,



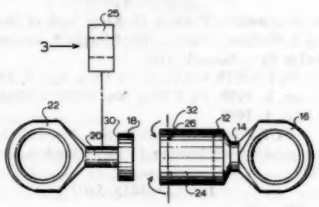
said socket member being resilient to accomodate insertion of said ball into said spherical cavity portion, said skirt engaging said crank arm when said ball is received in said spherical cavity portion.

4,552,481

ENVIRONMENTAL IMPERVIOUS SWIVEL

Thomas J. Bluett, 4 Cordell Pl., East Northport, N.Y. 11731

Filed Jul. 23, 1984, Ser. No. 633,485
Int. Cl.[4] F16D *1/12*
U.S. Cl. 403—165 **6 Claims**



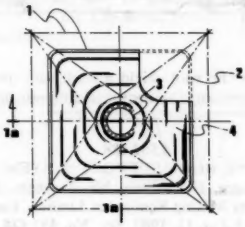
1. An environmental impervious swivel, comprising:
(a) a cylinder connected by a first shank to a first connecting member;
(b) a cylindrical piston connected by a second shank to a second connecting member, said piston being inserted coaxially into said cylinder so that said piston can swivel inside said cylinder;
(c) a cylindrical bushing disposed coaxially around said second shank and having an outer diameter equal to the outer diameter of said piston and having a relatively close fit to the inner diameter of the cylinder;
(d) means for inserting said cylindrical bushing over said second shank; and
(e) means for preventing said cylindrical piston from pulling free of said cylinder when an axial force is applied including a cylinder with an open end rolled over to form a flat front face and having an inner diameter so that said inner diameter of said rolled over end is less than an outer diameter of said cylindrical bushing and said cylindrical piston, the length of the bushing and piston approximating the cylinder length until the rolled over end so as to permanently secure said cylindrical piston within said cylinder and simultaneously also retard the entrance of any environmental contaminant while permitting low friction swiveling.

4,552,482

JUNCTION FOR CONNECTION AND ASSEMBLY OF TRUNCATED CONICAL-PYRAMIDAL GEOMETRIC SHAPE FOR MULTI-DIRECTIONAL ELEMENTS OF THREE-DIMENSIONAL STRUCTURES

Alexis Vikroff, 10 rue du Congres, 06000 Nice, France

Filed Feb. 2, 1983, Ser. No. 463,245
Claims priority, application France, Feb. 5, 1982, 82 02130
Int. Cl.[4] F16B *7/00*
U.S. Cl. 403—172 9 Claims



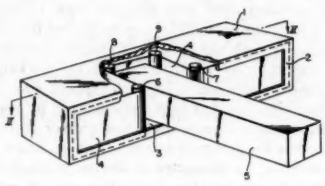
1. A connecting and assembly modular joint for the multi-directional elements of three-dimensional structures, comprising a unitary member having a central portion of truncated conical shape whose smaller base is a circular edge lying on the conical contour of said central portion and surrounding a round hole, and at least one flat portion extending outward and as a continuation of said central portion, said at least one flat portion lying on the surface of a regular polygon.

4,552,483

DEVICE FOR COVERING AN OBLONG OPENING IN A HOUSING

Gerold Anderka, Ellerbek; Joachim Brandt, Hamburg; Gerhard Deblitz, Quickborn; Rolf Martens, Hamburg; Rolf Paschen, Elmshorn, and Bernd Willimczik, Wedel, all of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Aug. 31, 1984, Ser. No. 646,187
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332044
Int. Cl.[4] F16B *17/00*
U.S. Cl. 403—288 4 Claims



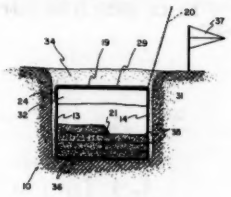
1. A device for covering an oblong housing opening, along which a movable slide block element, having a proximate portion extending into the housing and a distal portion extending outward through said housing opening, is movable back and forth, which comprises a flexible band engaged to extend around the element proximate portion, the width of the band being greater than the width of the housing opening, wherein means to hold the band against an inner surface of the housing between the slide block element and each end of the housing opening, are characterized by means immovably securing the band (4) to the housing proximate each end of the housing opening (3), deflecting rollers (6, 7) adapted to deflect the band (4) into the housing (1), which are supported upon the slide block element (5) in the vicinity of the housing opening (3), and guide rollers (8, 9) to guide the band (4) about an inner end face of the element (5), which are supported upon the proximate portion of the slide block element (5), located within the interior of the housing (1).

4,552,484

COMPOSTING CONTAINER FOR FIELD USE

David A. Nuttle, 1316 Ravenhurst Dr., Raleigh, N.C. 27609

Filed Jan. 6, 1984, Ser. No. 568,701
Int. Cl.[4] G21F *9/00*
U.S. Cl. 405—128 9 Claims



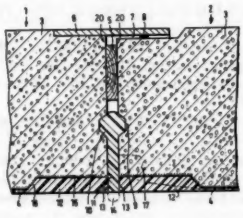
1. The method of providing field toilet type facilities comprising: transporting a folded inner unit constructed preferably of a double walled corrugated paper type material and an outer cover constructed preferably of a platic type material and both being biodegradable to a use location; unfolding said inner unit to form an inner container having sides, a bottom, and a least one top; unfolding said outer cover; inserting said unfolded inner container into said outer cover to form a combination field toilet and composting container; forming an opening in the earth; placing said combination container in said opening; placing a locating means adjacent said container; deposition alternate layers of feces and soil in said combination containers to fill the same; closing said top of said inner container; folding said outer cover over said inner container; and covering the combination container with soil whereby said feces will be anaerobic compost to destroy all intestinal organisms therein and said combination container will biodegrade.

4,552,485

PROCESS AND PREPRESSING PIPE FOR LAYING A PIPELINE IN THE EARTH

Heiner I. Hammer, Seevetal, Fed. Rep. of Germany, assignor to Schlegel Lining Technology GmbH, Hamburg, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,039
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142177
Int. Cl.[4] B63B *35/04;* E21D *11/00;* F16L *55/00, 1/02*
U.S. Cl. 405—184 8 Claims



1. Pipe for use in laying a prepressed pipeline in the earth comprising:

a load bearing shell having an inner surface; an at least substantially even outer surface and first and second longitudinal force transferring end faces;

a layer of polymeric material adjacent to said inner surface,

said layer characterized by a first average thickness over a substantial portion of said pipe between said end faces and end portions of greater thickness proximate said end faces; and

a plurality of flexible projections extending from said layer into said shell for anchoring said layer to said shell.

4,552,486

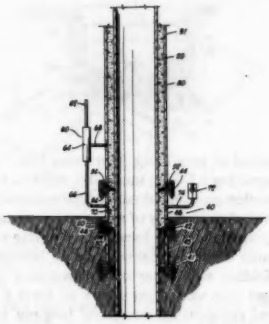
GROUTING METHOD - CHEMICAL METHOD

Lloyd C. Knox, Duncan, Okla., and Clayton A. Moore, London, England, assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1984, Ser. No. 591,701

Int. Cl.[4] E02D *21/00, 5/34*

U.S. Cl. 405—227 **20 Claims**



1. A method of grouting a first and second annular space formed by an annular support member having an upper pile seal assembly and a lower pile seal assembly thereon and a pile driven therethrough of an offshore platform, said first annular space being located between said annular support member and said pile and between said upper pile seal assembly and said lower pile seal assembly, said second annular space being located between said annular support member and said pile and above said upper pile seal assembly, said method comprising the steps of:

injecting an alkali silicate material which floculates upon contact with a di- or multivalent cation fluid into said first annular space; and

injecting cement or grout into said second annular space.

4,552,487

MINE ROOF SUPPORT UNIT HAVING DUST SUPPRESSION MEANS

Walter Weirich, Dortmund, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Luner, Fed. Rep. of Germany

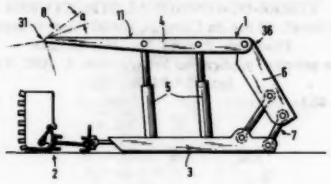
Continuation of Ser. No. 243,658, Mar. 13, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,361

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010415

Int. Cl.[4] E21D *17/02, 19/00;* E21C *47/02*

U.S. Cl. 405—295 **19 Claims**

1. In a mine roof support unit having a generally horizontally disposed roof shield and a rearwardly inclined goaf shield, said roof shield being vertically adjustable between a set position against an overlying roof portion of the mine working and a retracted position spaced therebeneath, and said goaf shield being adapted to screen off a goaf space of the mine working, the improvement comprising: at least one liquid spray nozzle mounted on an upper side of the support unit at a front (face-side) edge of the roof shield and directed upwardly towards said overlying roof portion, and means for spraying liquid through said at least one nozzle while said roof shield is retracted from said overlying roof portion thereby to moisten the same and inhibit the subsequent formation of dust occasioned



either by setting the roof shield against said overlying roof portion or by retracting the roof shield therefrom.

4,552,488

MINE ROOF SUPPORT SYSTEM

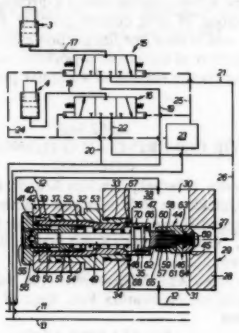
Peter Elliott-Moore, Harvington, Nr. Evesham, England, assignor to Dowty Mining Equipment Limited, England

Filed Jan. 12, 1983, Ser. No. 457,424

Claims priority, application United Kingdom, Feb. 3, 1982, 8203047

Int. Cl.[4] E21D *15/44, 23/26*

U.S. Cl. 405—299 **5 Claims**



1. A mine roof support system including a plurality of hydraulically-operated mine roof supports each having a roof beam and at least one extendible prop for raising the roof beam into engagement with the mine roof, means associated with each said support for advancing it towards the working face of the mine, control valve means for each support, a main supply pipe for supplying liquid at high pressure and by way of respective said control valve means to said prop or props of each of said supports for full roof support, a main return pipe, a respective relief valve connected to discharge liquid into said main return pipe and including a movable element and a seating with which said element is co-operable, said relief valve being communicable with said prop or props by way of its associated said control valve means when said liquid at high pressure is no longer supplied to said prop or props and the respective said roof support is being advanced by said advancing means, said movable element of each said relief valve comprising at least two relatively-movable parts, which are connected together with a predetermined amount of lost motion, and being so co-operable with said seating as to ensure that when said support is so advancing a substantially constant predetermined back-pressure is maintained in said prop or props sufficient to maintain the roof beam of the respective said support in only light pressure contact with the mine roof, but if the pressure in said main return pipe exceeds the pressure

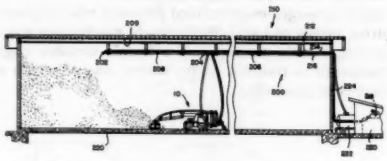
then subsisting in said control valve means, one of said parts of said element is caused automatically to close onto said seating.

4,552,489

VEHICULAR MOBILE HIGH CAPACITY PNEUMATIC CONVEYOR

Wayne M. Jacobson, York, and Roger L. Quaintance, Henderson, both of Nebr., assignors to Cyclonaire Corporation, Henderson, Nebr.

Division of Ser. No. 339,479, Jan. 15, 1982, Pat. No. 4,432,676. This application Nov. 14, 1983, Ser. No. 551,103
Int. Cl.⁴ B65G *53/40*
U.S. Cl. 406—39 **5 Claims**



1. In a large storage building of the type which provides storage for dry particulate material, such as Portland cement or the like, the building being of the type which stores the material on a single elevation and wherein the horizontal storage area is substantially larger that the height, apparatus for pneumatically conveying said material from said building, said apparatus comprising:

a self-propelled vehicle having a vertically moveable and horizontally rotatable mechanical boom constructed for movement and manipulation within the interior of said building, said boom having a nozzle assembly at the outer end portion thereof adapted to engage the material, said vehicle further having a transfer vessel assembly fixedly attached to the rear end of the vehicle for receiving material conveying through a conveying line interconnecting the nozzle assembly with the transfer vessel assembly under vacuum pressure and for transferring the material into a conveying line under positive pressure;

sources of positive pressure and vacuum pressure for use by said transfer vessel assembly during pneumatic conveying of said material, said sources of positive and vacuum pressure being located outside of said storage building;

means connected to said sources of positive and vacuum pressure extending along the building, said means having a plurality of sets of distribution ports, each of which is adapted to provide a connection point to distribute both positive and vacuum pressure and a connection point for said conveying line from said transfer vessel assembly;

flexible conduit means for interconnecting one set of said distribution ports with said transfer vessel to provide interconnections for said positive pressure, vacuum pressure and the material conveying line;

such that said vehicle can be moved within said building so that said nozzle assembly can engage said material for removing the same from said building during operation, the vehicle being capable of operating all areas thereof by being attached to one of said ports in the immediate area of operation.

4,552,490

SOLIDS FEED CONTROL VALVE ASSEMBLY

Thomas J. Neale, Parsippany, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

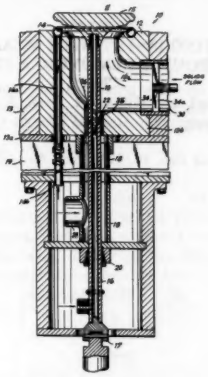
Continuation of Ser. No. 482,808, Apr. 7, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,497
Int. Cl.⁴ B65G *53/48*
U.S. Cl. 406—56 **12 Claims**

1. A poppet type valve assembly with gas purged seat for controlling flow of particulate solids therethrough, comprising:

(a) a valve body having a solids flow passageway therein and having a purged valve seat located at the passageway outlet end;

(b) a torus-shaped manifold located radially outwardly from the valve seat, said manifold having multiple outlet ports for directing a purge gas flow radially inwardly toward a mating valve head, said manifold being connected to a gas flow passageway located within said valve body for supplying a purge gas to said valve head;

(c) a poppet type valve head mating with said valve seat, said head being rigidly attached to an elongated stem, said



stem passing through a packing gland arranged for pressure sealing around the elongated stem, said stem being adapted for moving said valve head relative to said valve seat;

(d) an elongated tube extending between said valve body and said packing gland and surrounding said valve stem; and

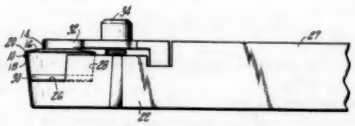
(e) at least one booster nozzle located in said valve body adjacent said valve stem for passing a gas therethrough to facilitate passage of the particulate solids through the valve body passageway; and whereby the poppet valve head seating surface is gas purged to remove particulate solids therefrom.

4,552,491

CUTTING TOOL HAVING CYLINDRICAL CERAMIC INSERT

Frederick D. Parker, Springfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 23, 1980, Ser. No. 161,825
Int. Cl.⁴ B26D *1/00*
U.S. Cl. 407—107 **5 Claims**



1. A cutting tool comprising:

a holder having a portion adapted for receiving a ceramic insert;

releasable clamping means attached to the holder, for maintaining the insert in contact with the holder;

a ceramic insert, engaged with the holder and clamping

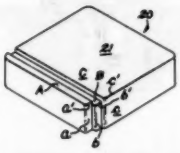
means, the insert having the shape of a tapered cylinder with the cylinder diameter increasing along the insert length from a first end to a second end, the first insert end adapted to mate with a portion of the holder, the opposing second insert end having a circumferential edge bevel and a chamfer, the intersection of the second insert end and tapered cylinder wall producing a circumferential cutting edge having at any point a compound negative rake angle provided by the chamfer and the bevel, the rake angle of the chamfer being more negative than the rake angle of the bevel, and the insert taper providing a relief angle when the tool is positioned for cutting along the plane in which the circumferential cutting edge lies.

4,552,492

CUTTING INSERT WITH MEANS FOR SIMULTANEOUSLY REMOVING A PLURALITY OF CHIPS

Ranga Komanduri, and William R. Reed, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,694
Int. Cl.⁴ B23B *27/22*
U.S. Cl. 407—114 **7 Claims**



1. A polygonal cutting insert comprising first and second spaced substantially parallel opposed primary faces, a plurality of side faces generally perpendicular to said primary faces connecting said primary faces, at least one corner formed by the intersection of said first primary face and two of said side faces, at least three discrete substantially parallel cutting edges at said corner formed adjacent the intersection of said two side faces and said first primary face, at least two of said cutting edges being staggered inwardly to a different extent in a direction parallel with said first primary face and at least one of said cutting edges being staggered inwardly in a direction perpendicular to said first primary face.

4,552,493

APPARATUS FOR AUTOMATICALLY DISPLACING THE RADIAL POSITION OF A CROSS-FEED SLIDE IN A CROSS-FEED HEAD OF A CUTTING MACHINE

Robert Schultshick, Uster, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Apr. 25, 1983, Ser. No. 488,601
Claims priority, application Switzerland, May 3, 1982, 2696/82
Int. Cl.⁴ B23B *49/00, 25/06*
U.S. Cl. 408—3 **12 Claims**

1. A cutting machine, especially a boring and milling machine, comprising:

a stand including a guide member;

a carriage arranged for reciprocating movement along said guide member in a carriage displacement path;

drive means for displacing said carriage on said stand and including a displacement spindle and a drive motor;

a machine measurement system mounted on said carriage and including a scale mounted substantially parallel to said guide member for measuring the position of said carriage;

a spindle having an axis of rotation arranged at said carriage at substantially right angles to said guide member and including a tool holding and chucking fixture;

said spindle having a groove identifying an indexed position thereof;

a cross-feed head inserted into said spindle and including:

a spindle insert;

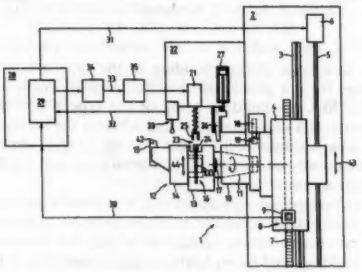
a cross-feed slide displaceably arranged in said spindle insert and provided with a tool having a top;

a displacement mechanism for displacing said cross-feed slide relative to said spindle insert and comprising a spindle drive;

a cantilever structure;

a displacement drive means arranged at said cantilever structure at the end of said carriage displacement path for driving said displacement mechanism;

a clutch arrangement provided between said displacement drive means and said displacement mechanism and comprising a male member and a female member engaging therewith to transmit rotary action, one of which members is advanceable;



an indexing pin displaceably journalled at said carriage for engaging said groove provided at said spindle in said indexed position thereof such that said spindle is retained in said indexed position;

a sensor for sensing the position of said cross-feed slide;

a numerical control provided with an adjusting control mechanism for controlling said drive motor and said displacement drive means and connected with said sensor and with said machine measurement system;

said numerical control being provided for adjusting a cutting radius defined by a distance between said axis of rotation of said spindle and said tip of said tool;

clamping means provided in said cross-feed head for clamping said cross-feed slide in a defined position in relation to said spindle insert; and

releasing means provided on said cantilever structure at one end of said carriage displacement path for releasing said clamping means.

4,552,494

SAFETY SHIELD FOR DRILL PRESS

Douglas R. Wix, Rte. 2, Box 286, Westmoreland, Tenn. 37186

Filed May 14, 1984, Ser. No. 610,151
Int. Cl.⁴ B23B *47/34;* B23Q *11/08*
U.S. Cl. 408—67 **4 Claims**

1. A collapsible shield for protecting an operator of a vertical drill press, said shield comprising:

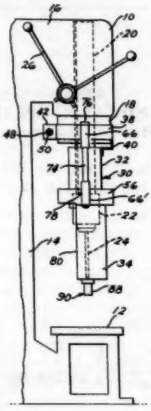
a. a pair of interconnected telescoping hollow cylinders, with a top cylinder of elongated shape adapted to be mounted to a non-rotating, vertically movable drill housing member, and a lower cylinder of elongated shape that is suspended from the top cylinder and is capable of vertical telescoping movement with respect to the top cylinder;

b. the top cylinder being fitted above its top end with an

enlarged split collar that is joined to the top cylinder by tab means remote from the said split so the collar may expand and contract, and fastening means assembled across the split of the collar for tightening and loosening the collar with respect to the said drill housing member;

c. the lower cylinder being fitted with an enlarged collar adjacent its top end of about the same diameter as the said split collar, the lower cylinder being larger in diameter than the top cylinder so the lower cylinder may telescope over the top cylinder;

d. a first pair of opposite tubular bearings each mounted vertically on the upper split collar, and a second pair of opposite tubular bearings each mounted vertically on the



lower collar to be in vertical alignment with the said first pair, and a vertical elongated slide pin mounted between the aligned bearings of both collars, the top portion of each slide pin having an enlarged head, and the pins loosely fitted in the bearings of the top collar and fixed with respect to the bearings of the lower collar for suspending the lower cylinder from the top cylinder by means of these slide pins;

e. one side of the lower cylinder being removed so that it is open for gaining access to the interior thereof, the bottom of the lower cylinder being closed by a wall that is furnished with a central opening supporting a downwardly projecting tubular drill guide.

4,552,495

HORIZONTAL DRILLING AND MILLING MACHINE

Matthias Malzkorn, Jüchen, Fed. Rep. of Germany, assignor to Scharmann GmbH & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 16, 1984, Ser. No. 641,489

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3329964

Int. Cl.[4] B23B *3/20*

U.S. Cl. 409—136 **6 Claims**

1. A horizontal combined drilling and milling machine, comprising:

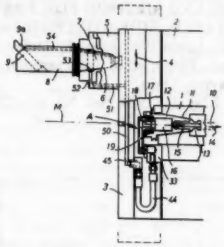
a hollow drilling spindle which conveys cooling medium and is provided with a conical receiving recess;

a faceplate having a first part disposed thereon;

a cross slide movably supported on said faceplate;

a tool cartridge supported on said cross slide for receiving a tool holder which is adapted to hold a tool;

an adapter, which includes a hollow cone-shaped head which can be removably inserted in said conical receiving recess of said drilling spindle to receive cooling medium therefrom; said adapter also includes a hollow moving arm which is connected to said cone-shaped head, is rotatable relative thereto, and can receive cooling medium therefrom; said arm includes a second part which can be removably connected to said first part of said faceplate and can convey cooling medium thereto;



a cooling medium line associated with said cross slide; and

a flexible connection disposed between said first part of said faceplate and said cooling medium line to convey cooling medium from the former to the latter.

4,552,496

DIVIDED MILLING CUTTERS

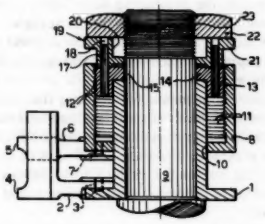
Lennart Johannesson, Parkgatan 41, S-571 00 Nässjö , Sweden

Filed Jan. 5, 1983, Ser. No. 455,825

Claims priority, application Sweden, Jan. 7, 1982, 8200034

Int. Cl.[4] B23B *31/40*

U.S. Cl. 409—209 **5 Claims**



1. A divided milling cutter comprising a cutter spindle having an annular shoulder and a threaded portion which is axially spaced from said annular shoulder; an inner sleeve slidable on to and securable to said cutter spindle between said threaded portion and said annular shoulder; a first cutter half releasably secured to said inner sleeve; a second cutter half; and means for securing said second cutter half to said cutter spindle in a position which is adjustable in the axial direction with respect to said first cutter half, wherein said securing means comprises a first annular abutment surface at one end of said inner sleeve for engaging said annular shoulder of said cutter spindle; a second annular abutment surface at the other end of said inner sleeve; an intermediary sleeve having an inner, annular flange for engaging said second abutment surface of the inner sleeve, external threads, and first coupling means; an outer sleeve having internal threads for cooperation with the external threads of said intermediary sleeve, and an annular flange which is directed radially inwards and slidingly encircles said spindle and to which said second cutter half is fastened, said annular flange of the outer sleeve being located at that end of the outer sleeve which is adjacent to said first cutter half; and a pressure ring having a tubular portion which is insertable into said outer sleeve and is provided with second coupling means for engagement with said first coupling means of the intermediate sleeve, said first and second coupling means being constructed for transferring a torque from said pressure ring to said intermediary sleeve, and an annular flange projecting radially outwards from said tubular portion; and a locking nut

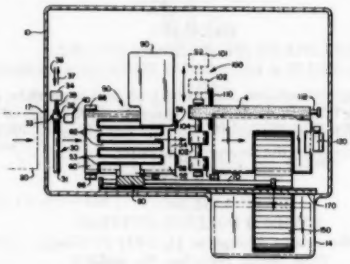
having internal threads for engaging the threads of said threaded portion of said cutter spindle.

4,552,497

APPARATUS AND METHOD FOR PREPARING MULTIPAGE, TAPED, SIDE-STITCHED DOCUMENTS

Barry C. Kockler, Lewisville; John E. Dobson, Dallas, and Daniel T. Noonan, Plano, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed May 21, 1984, Ser. No. 612,229
Int. Cl.[4] B42B *5/00, 2/00*
U.S. Cl. 412—6 **18 Claims**



1. Apparatus for producing a multipage, side-stitched document comprising:

(a) a support surface;

(b) scoring means for producing score lines upon sheets of paper transported along said support surface;

(c) means for feeding a series of sheets in aligned progression along said support surface and in scoring relationship with said scoring means;

(d) lateral positioning means for altering the relative lateral position between said support surface and said scoring means to cause progressive changes in the location of the score lines produced upon different ones of said sheets;

(e) accumulating means for collecting a plurality of sheets fed and scored as aforesaid and arranging said sheets into a stack; and

(f) stitching means for driving a plurality of staples into said stack along spaced positions within a margin defined by said score lines and the corresponding edge of said stack.

2. Apparatus for preparing a multipage, side-stitched document which comprises in combination:

(a) means for feeding a series of sheets to be included in said document in a paused, timed, preselected order to a scoring station;

(b) said scoring station including:

(i) a scoring mechanism for impressing a vertical score line along one edge of each sheet as it passes through said scoring station, and

(ii) means for moving said scoring mechanism to and through preselected positions;

(c) means for determining when a sheet has passed through the scoring station and generating a signal responsive thereto to move the scoring mechanism to its next preselected position;

(d) a downstream, in-line accumulating station to receive scored sheets from the scoring station;

(e) first clamping means associated with the accumulating station for grasping a complete assembly of sheets on the side opposite the score lines;

(f) means for moving said clamped assembly to a downstream, in-line stitching station;

(g) said stitching station including a stitching head to make two or more stitches in the assembled sheets adjacent to and exterior of the score lines;

(h) means for moving the stitched assembly downstream from the stitching station;

(i) stop means downstream of the stitching station to stop movement of the side-stitched document;

(j) second clamping means associated with said stop means for grasping the document on its upstream side transverse to the stitched side;

(k) means for releasing the first clamping means from the document and returning said clamping means to the accumulating station; and

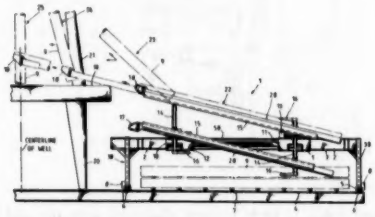
(l) means for releasing the second clamping means and transferring the side-stitched document to a packing station.

4,552,498

PICKUP AND LAY-DOWN APPARATUS

Edward D. Dysarz, Houston, Tex., assignor to Branham Industries, Inc., Conroe, Tex.

Filed May 2, 1983, Ser. No. 490,731
Int. Cl.[4] E21B *19/14*
U.S. Cl. 414—22 **17 Claims**



1. A pick-up and lay-down apparatus for transferring tubular pipe from a pipe rack to the drill floor of a drilling rig, comprising:

a gantry extending across and adapted for movement over the pipe rack, said gantry including a gantry cross beam which extends across the pipe rack;

a moveable trolley mounted on said gantry and adapted for movement along said gantry beam; a rotation means;

a pair of moveable spaced apart lifting arms mounted to said trolley by said rotation means, each said spaced apart lifting arm adapted to move independently of the other;

a moveable auxiliary lifting arm mounted on each said spaced apart lifting arm and adapted for independent movement relative to said lifting arm, said gantry and said moveable trolley cooperating to position said lifting arms over a pipe to be transferred;

a fork assembly rotatably mounted to each of said spaced apart lifting arms, said fork rotatable from a first position in which said spaced apart lifting arms may lower said forks below said pipe to be transferred, to a second position in which the forks are extended beneath said pipe to be transferred;

means for rotating said fork assembly; and

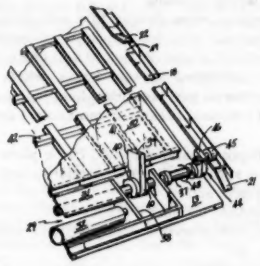
a trough assembly mounted to said auxiliary lifting arms for movement therewith, said auxiliary lifting arm moving said trough in the direction of said forks to secure said pipe to be transferred between said forks and said trough assembly, said rotation means rotating said spaced apart lifting arms about said gantry from a first position in which said trough assembly is above said pipe to be transferred to a second position in which said pipe to be transferred is resting in said trough assembly, said trough assembly being extensible to supportably move said pipe to be transferred to the drill rig floor.

4,552,499

SLIP SHEET RETAINERS

Julian D. Foust; Leonard M. Ysidro, Sr., both of Cleveland, and Danny R. Cross, Decatur, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Dec. 22, 1982, Ser. No. 452,262
Int. Cl.⁴ B65G *57/00*
U.S. Cl. 414—125 **10 Claims**



1. In a palletizer for providing pallets with a bottom feed pallet system including a generally vertical stack of pallets having at least a bottommost and a next higher pallet wherein the underside of a bottommost pallet is placed on conveying means, the pallet being conveyed along a predetermined path of travel to a loading point for the placement of objects thereon, the palletizer having means to place a slip sheet having a front edge and a back edge on top of a pallet as the pallet is conveyed by conveying means along the predetermined path of travel, the improvement comprising in combination:

(a) a pallet push bar connected to the conveying means, the pallet push bar having a front side, a rear side and a top portion therebetween, the top portion having a rotatable roller with a first end and an opposing second end, the roller being adjacent a portion of the rear side to support the underside of the next higher pallet the front side contacting a back edge of the pallet to convey the pallet along the predetermined path of travel; and

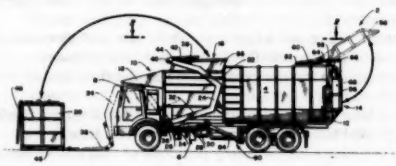
(b) means for retaining the slip sheet in position on top of the pallet as the pallet is conveyed along the predetermined path to the loading point, the means for retaining being connected to the pallet push bar exteriorly of both the first end and the opposing second end of the roller and having at least a first serrated slip sheet engaging surface to engage the back edge of the slip sheet to prevent the slip sheet from riding up and over the retaining means as the pallet is conveyed along the predetermined path of travel.

4,552,500

REFUSE HAULING AND STORAGE APPARATUS

Jose A. Ghibaudo, 12703 Alconbury, Cerritos, Calif. 90701, and Eduardo J. Ghibaudo, 7103 De Palma St., Downey, Calif. 90241

Filed May 18, 1984, Ser. No. 611,739
Int. Cl.⁴ B65F *3/20*
U.S. Cl. 414—408 **14 Claims**



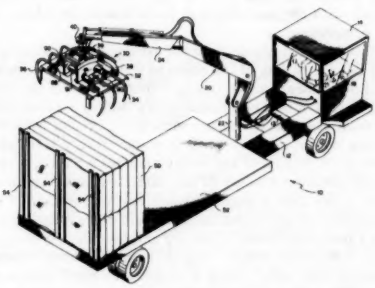
1. A refuse handling device comprising an elongated, hollow body arranged for mounting on a motor truck chassis or the like having a cab, said body being of uniform, polygonal cross-section throughout its length, closed on a forward end and open on an opposite rear end, and having an upper loading therein spaced longitudinally from said open end for depositing refuse within the body, said forward closed end having an elongated cab canopy portion adapted to project outwardly over said motor truck chassis cab; means on said body for lifting a refuse container to dump refuse from the container into said body through said upper loading opening and for thereafter lowering said container; a closure means associated with said open end of said body for releasably closing said rear opening in said body; compacting means within said body for longitudinal movement therein to compress against said closure means refuse loaded thereinto through said upper loading opening having a compacting platen mounted for movement longitudinally in said body and having an upper angularly displaced inclined guiding part extending a sufficient distance forward thereof for guiding refuse which is falling by gravity, rearward of the position of said compacting platen within said body, and being adapted to be received into said elongated cab canopy portion of said body when said compacting platen is positionally located in said hollow body substantially adjacent said upper loading opening for accepting refuse passing therethrough, and a lower packer part, so that refuse entering said body through said upper loading opening is guided by said upper angularly displaced inclined guiding part into a position to be acted upon by said lower packer part, and power operated means for causing reciprocal packing movement of said compacting platen to urge said deposited refuse rearwardly in said body.

4,552,501

BIG BALE HANDLING SYSTEM

Raymond W. Clark, Rte. 1, Box 131, Hansen, Id. 83334, and Rudolf Limpert, 280 Woodland Dr., Summit Park, Utah 84060

Continuation-in-part of Ser. No. 418,241, Sep. 15, 1982, abandoned. This application Sep. 14, 1983, Ser. No. 532,574
Int. Cl.⁴ B60P *1/00*
U.S. Cl. 414—486 **7 Claims**



3. A system for handling and transporting large bales of crops, said system comprising;

a motorized chassis having operator control means whereby a single operator can control said system, said chassis further having table means onto which bales can be loaded;

boom means connected to said chassis for lifting and maneuvering the bales;

fork means positioned on a distal end of said boom means for grabbing the bales and holding them while they are maneuvered; and

rotator means positioned on the distal end of said boom and connected to said fork means, said rotator means compris-

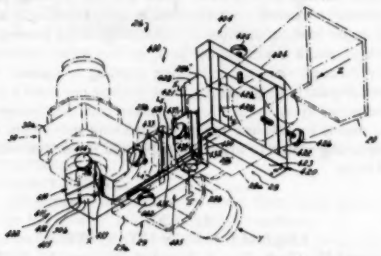
ing first means for rotating said fork means about a substantially vertical axis, and second means for rotating said fork means about a substantially horizontal axis such that said bales of crops may be rotated and stacked on a selected side thereof, said second means for rotating said fork means about a substantially horizontal axis comprising a curved track and a sled, said sled being translatable along said track from a first position of adjustment to a second position of adjustment.

4,552,502

APPARATUS FOR LOCKING THE WRIST LINKS OF A WORK ROBOT IN THE SAME RESPECTIVE RELATIVE POSITIONS TO FACILITATE CALIBRATION OF THE WRIST LINK POSITION TRANSDUCERS THEREOF

Martin J. Harjar, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Oct. 7, 1983, Ser. No. 539,919
Int. Cl.[4] G66C *13/00*
U.S. Cl. 414—680 **3 Claims**



1. A fixture to facilitate calibrating position transducers respectively associated with at least three different articulated links serially connected in a chain to define a multi-link, multi-axis robot, each robot link including a rotary output member and a housing rotatably mounting said output member, each robot link of the chain further including means securing the housing associated therewith to the rotary output member associated with the next adjacent inner link of the chain, said fixture comprising:

outer means engageable with the rotary output member of the outermost link of the chain to prevent with respect to said outer means when engaged therewith both (a) rotary movement of said outermost rotary output member about its own axis and (b) rotary movement of said outermost rotary output member about a second rotary axis coincident with the axis of the rotary member which is secured to the actuator housing of the outermost link, which second rotary axis is angled to said axis of rotation of said outermost rotary output member, said outer means including a bore configured to snugly embrace the periphery of said outermost rotary output member when inserted therein, said bore having a locating element therein engageable with a corresponding locating member on the periphery of said outermost rotary output member to prevent rotation of said outermost rotary output member relative to said bore,

inner means engageable with the innermost link which includes said housing for the innermost rotary output member, said inner means when engaged with said innermost link being immovable relative thereto both (a) axially along the length of said innermost link and (b) rotationally about the longitudinal axis of said innermost link, and

intermediate means rigidly interconnecting said inner and outer means to prevent any relative movement therebetween, said intermediate means being connected relative to links disposed between said innermost link and said outermost link, solely through said inner means and said outer means, thereby locking all links of said chain against relative movement with respect to each other, and wherein

said inner means and said intermediate means are detachable,

said axis of rotation of said outermost rotary output member is orthogonal to the axis of the rotary output member which is secured to the actuator housing of said outermost link,

said inner means includes

a rectangular frame having first and second orthogonal locating surfaces for engaging adjacent orthogonal sides of said innermost link of said chain to position the plane established by said frame, when said frame is engaged with said innermost link, perpendicular to the axis of rotation of said innermost rotary output member, and

a shaft disposed parallel to said frame plane and said first locating surface and perpendicular to said second locating surface, and

said intermediate member includes

a locating bore disposed parallel to said bore of said outer means, and

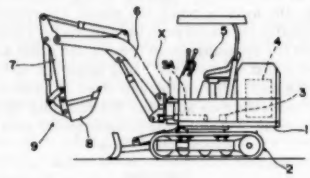
selectively operable clamp means for temporarily clamping said shaft in said locating bore to temporarily couple said intermediate means and said inner means, and thereby orient the rotational axes of said rotary output members in mutually orthogonal directions when said intermediate means and inner means are temporarily coupled, and said frame is engaged with said outmost link, and said outermost rotary output member is engaged in said bore of said outer means.

4,552,503

EXCAVATING VEHICLE

Akihiko Mouri; Yoshinobu Tabuchi, both of Sakai; Akira Tsuda, Osaka; Masahiro Tsutsumi, Sakai, and Kazushige Ikeda, Osaka, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Dec. 21, 1983, Ser. No. 563,917
Claims priority, application Japan, Dec. 24, 1982, 57-234298
Int. Cl.[4] A01B *63/111*
U.S. Cl. 414—687 **2 Claims**



1. An excavating vehicle including a hydraulic actuator and a control system for producing a swivel motion of a swivel base which comprises:

means for moving said vehicle from place-to-place,

a swivel base on said means for moving said vehicle,

an excavating apparatus on said swivel base,

a hydraulic system for operating said actuator drive, said hydraulic system including,

a control valve for adjusting a flow rate and direction of flow of a hydraulic fluid supplied to said actuator,

a motor-pump for pumping said hydraulic fluid to said control value,

swivel base position determining means for setting a predetermined stopping position of said swivel base,

detector means for detecting positions of said swivel base,

operator position setting means for setting a direction and speed of movement of said swivel base relative to a neutral position, and

control means for controlling fluid flow through said control valve,

said control means adapted to receive control signals from said operator means, said position setting means and said position detector means which determines a swivel speed of said swivel base and a deceleration timing signal from said operator position setting means which signals are evaluated in said control means and result in an output signal for controlling said control valve,

whereby said output signal to said control valve controls the fluid flow rate through said control valve thereby reducing the flow rate in a timed relationship in accordance with swivel speed to slowly stop said swivel base at a desired stop position, the faster the swivel speed, the earlier the output signal is directed to said control valve.

4,552,504

INDUSTRIAL ROBOT

Akiyoshi Nakada, Suita; Toshitugu Inoue, Kyoto; Haruo Tada, Kobe; Kiyoshi Shinki, Neyagawa; Kuninori Takezawa, Ikeda, and Makoto Doi, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

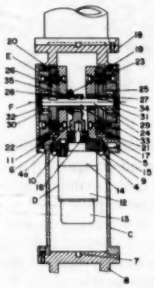
PCT No. PCT/JP83/00175, § 371 Date Jan. 31, 1984, § 102(e) Date Jan. 31, 1984

PCT Filed May 31, 1983, Ser. No. 579,362

Claims priority, application Japan, May 31, 1982, 57-93614

Int. Cl.⁴ F16H *33/00*

U.S. Cl. 414—735 **4 Claims**



1. An industrial robot comprising:

a plurality of arm units each composed of a driving unit from among a plurality of driving units having different driving powers and different driving speeds, a joint unit from among a plurality of joint units having different driving speeds and power transmitting capacities, and an arm from among a plurality of arms having different sizes and load capacities, said arm units being connected to each other in series, said joint units, driving units and arms each having connecting surfaces thereon having positioning parts and setting-fixing parts in a predetermined pattern for enabling the joint units, driving units and arms to be detachably connected to other joint units, driving units and arms at corresponding connecting surfaces to form arm units with the desired joint units, driving units and arms;

said joint units each having a stationary frame and a follower frame rotatably connected to each other for rotation around an axis of rotation and being connected at two positions along said axis of rotation and having a driving power transmitting mechanism connected between said frames and including reduction gears at at least one of said two positions;

said driving units each having a motor, a position sensing unit fixed to said motor, and a flange on which said motor is mounted and having bearings rotatably supporting the shaft of said motor and an output member fixed to the motor shaft, said motor shaft, when a driving unit is connected with a joint unit, intersecting said axis of rotation of said joint unit and said power transmission mechanism having means engaged with the output member on the motor shaft of the connected driving unit, whereby said output member and said power transmission mechanism are connected to each other in an arm unit so as to be capable of power transmission from the motor of the driving unit to the power transmission mechanism of a joint unit.

4,552,505

INDUSTRIAL ROBOT HAVING DIRECT COAXIAL MOTOR DRIVE

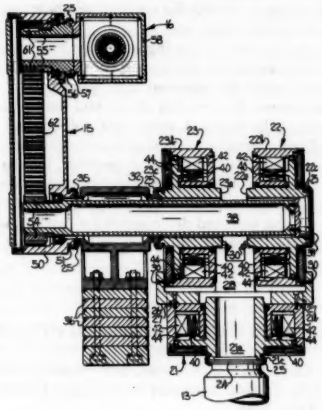
Robert H. Gorman, Clinton, Pa., assignor to American Robot Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 443,156, Nov. 19, 1982, , which is a continuation-in-part of Ser. No. 346,222, Feb. 5, 1982, Pat. No. 4,424,473. This application Aug. 19, 1983, Ser. No. 524,839

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.⁴ B66C *1/10*

U.S. Cl. 414—735 **9 Claims**



1. An industrial robot having at least three controlled axes of movement, and characterized by the absence of a torque converting drive train in the drive units of three primary axes of movement, and comprising

a support member,

a first drive unit having a base component fixedly mounted to said support member, a secondary component rotatably mounted with respect to said base component to define a first axis, and drive means for relatively rotating said base component and secondary component about said first axis,

a second drive unit having a base component, a secondary component rotatably mounted with respect to its base component to define a second axis, means fixedly mounting said secondary component of said second drive unit to said secondary component of said first drive unit such that the second axis is non parallel to said first axis, output means fixed to said base component of said second drive unit and aligned coaxially with said second axis, and drive means for relatively rotating said base component and secondary component of said second drive unit about said second axis,

a third drive unit having a base component, a secondary component rotatably mounted with respect to its base component to define a further axis, means fixedly mounting said secondary component of said third drive unit to the secondary component of said first drive unit such that said further axis is coaxial with said second axis, output

means fixed to said base component of said third drive unit and aligned coaxially with said second axis, and drive means for relatively rotating said base component and secondary component of said third drive unit about said second axis, and

said drive means of each of said first, second, and third drive units comprising an electrical motor having a rotor disposed coaxially about the associated rotational axis and being fixed to one of either said base component or said secondary component thereof, and a stator disposed coaxially about the associated rotational axis and being fixed to the other of said base component or said secondary component thereof.

6. An industrial robot having a plurality of controlled axes of movement, and comprising

a support member (**26**),

a first drive unit (**22**) having a base component (**22***a*) and a secondary component (**22***b*), said base component being rotatably mounted with respect to said secondary component to define a central axis (**B**), means fixedly mounting said secondary component of said first drive unit to said support member, output shaft means (**38**) fixed to said base component and aligned coaxially with said central axis, and drive means (**40, 42**) for rotating said base component about said central axis, and

a second drive unit (**23**) having a tubular base component (**23***a*) and a secondary component (**23***b*), said base component being rotatably mounted with respect to its secondary component for rotation about said central axis and being coaxially disposed about said output shaft means, means fixedly mounting said secondary component of said second drive unit to said support member, tubular output means fixed to said base component of said second drive unit and aligned coaxially about said output shaft means of said first drive unit, and drive means for rotating said base component of said second drive unit about said central axis.

4,552,506

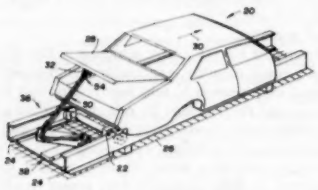
OPENER MECHANISM AND SYSTEM UTILIZING SAME

Michael A. Cummins, Mt. Clemens, and Thomas M. Powell, Dryden, both of Mich., assignors to GMFanuc Robotics Corporation, Troy, Mich.

Filed Jan. 24, 1984, Ser. No. 573,430

Int. Cl.[4] **B66C** *1/00*

U.S. Cl. 414—735 **21 Claims**



1. An apparatus for moving a closure of a vehicle body at a work station between open and closed positions along a path, the apparatus comprising:

a base;

a first arm mounted on said base for rotary movement about a first pivot axis;

a second arm mounted on said first arm for rotary movement about a second pivot axis between a parked position and a pick-up position corresponding to closed positions of the closure and for movement with the first arm between the pick-up position and a full-open position corresponding to the open position of the closure;

a gripper mechanism mounted on a free end of said second arm and adapted for receiving and releasing the closure in the pick-up position;

a motor including a rotatable actuator shaft; and

arm control linkage connected to said actuator shaft for transferring and translating rotary motion of the actuator shaft at a substantially constant angular velocity to rotate said second arm between the parked and pick-up positions and to rotate the first and second arms between the pick-up and full-open positions at a substantially sinusoidal angular velocity wherein the gripper mechanism is accelerated and decelerated in a relatively smooth fashion as it follows the path of the closure between the open and closed positions after receiving the closure.

4,552,507

POWER TRANSMISSION PLANT HAVING PRESSURE SURFACES

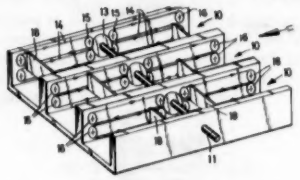
Ferdinand Klute, Fixberg 6, 4790 Paderborn, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,226

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308815

Int. Cl.[4] **F04D** *23/00*

U.S. Cl. 415—5 **10 Claims**



1. A power transmission plant for utilising the natural flow gradient of water or wind comprising a plurality of identical parallel fluid conduits, each having upper and lower longitudinal portions; a first pressure plate fixed in a generally upright position and disposed transversely in and displaceable along the upper portion of each conduit and a second upright pressure plate fixed in a generally upright position and disposed transversely in and displaceable along the lower portion of each conduit; a rotatable power output shaft; and guide and transmission means engaging and cooperating with the upper and lower portions of both pressure plates of each conduit such that upon movement of one of the plates along the respective conduit under the influence of fluid flowing along the conduit, the other plate moves along the conduit in an opposite direction and such that at the end of a predetermined path of travel the first plate is guided vertically into the lower portion of the conduit and the second plate is guided vertically into the upper portion of the conduit, said guide and transmission means being connected to said power output shaft to rotate the same upon movement of the plates.

4,552,508

WEAR RING MOUNT FOR LIFT PUMPS

Robert A. Reid, Charlton City, Mass., assignor to CPC Engineering Corporation, Sturbridge, Mass.

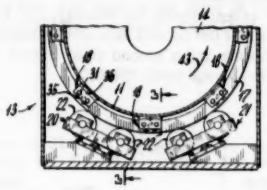
Filed Jun. 15, 1983, Ser. No. 504,463

Int. Cl.[4] **F16C** *13/04;* **F03B** *11/06*

U.S. Cl. 415—72 **9 Claims**

1. Mounting means for securing a wear ring to the tubular housing of an elongated inclined lift pump for rotatably supporting the lower end of said housing on cooperating rollers comprising a first plurality of blocks spaced uniformly about said tubular housing and secured thereto, each of said blocks including a slot having axes disposed in a plane perpendicular to the axis of said ring and inclined relative to the housing with the leading end spaced outwardly from the housing a distance

greater than the trailing end, a plurality of pins carried by and extending from the upper side of said wear ring and engaging said slots, a second plurality of blocks spaced uniformly about and secured to said tubular housing adjoining the lower side of said wear ring when the latter is in engagement with the first



set of blocks, each of the last said blocks having a slot parallel to the first said slots and inclined in the direction thereof and pins carried by the lower side of said wear ring and engaging the last said slots, said slots being of arcuate shape having the concave side facing said tubular housing.

4,552,509

ARRANGEMENT FOR JOINING TWO RELATIVELY ROTATABLE TURBOMACHINE COMPONENTS

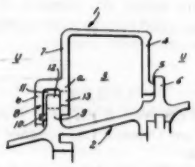
Ludwig Schweikl, Moosburg; Horst Weiss, Seefeld, and Friedrich Sippel, Stein, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,427

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003469

Int. Cl.⁴ F01D *25/26*

U.S. Cl. 415—135 **14 Claims**



1. An arrangement for joining two rotationally symmetrically correlated turbomachine components which are subjected to dissimilar thermal effects, the components defining between them an air duct surrounding the axis of the components, comprising:

(a) a resilient band-like wall section extending radially from a first component,

(b) a wall section projecting radially from a second component, the resilient wall section bearing resiliently in an axial direction against the second component wall section to provide a seal for the air duct,

(c) another wall section of the first component and another wall section of the second component cooperating to form a radially extending tongue-in-groove joint coaxial with the two components, the tongue of the joint fitting loosely enough in the groove of the joint to permit relative axial and radial movement between the two components, and

(d) a bayonet-type connection between one of the cooperating pairs of wall sections of the two components, the connection permitting axial movement between the two components, to effect assembly thereof, when the components are in one relative circumferential orientation, and the connection preventing axial disassembly movement between the components when they are in a different relative circumferential orientation.

4,552,510

RADIAL TYPE CERAMIC TURBINE ROTOR AND METHOD OF PRODUCING THE SAME

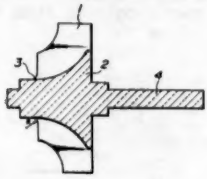
Mizuno Takeyuki, Toyohashi, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Feb. 13, 1984, Ser. No. 579,764

Claims priority, application Japan, Feb. 24, 1983, 58-28632

Int. Cl.⁴ F01D *5/34*

U.S. Cl. 416—241 B **8 Claims**



1. A radial type ceramic turbine rotor comprising a shaft portion, a hub integrally connected to said shaft portion, a blade portion integrally formed on said hub, an end surface on a gas exit side of the hub extending from an end surface of said blade portion in the proximity of said hub, and a fillet formed at a circular connection between said blade portion and said end surface on the gas exit side of the hub, said fillet comprising a concave surface having a radius of curvature of greater than 3 mm.

4. A method of producing a radial type ceramic turbine rotor which comprises a shaft portion, a hub integrally connected to said shaft portion, a blade portion integrally formed on said hub, an end surface on a gas exit side of the hub extending from an end surface of said blade portion in the proximity of said hub, said method comprising the steps of injection molding a ceramic material into an injection molding die, said injection molding die producing a fillet at a circular connection between said blade portion and said end surface on the gas exit side of the hub, said fillet comprising a concave surface having a radius of curvature of greater than 3 mm, after sintering, removing a plasticizer from the injection molded rotor and sintering the rotor under atmospheric pressure.

4,552,511

PROPELLER FOR MARINE PROPULSION DEVICE

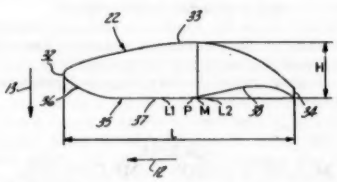
Yukio Sumigawa, Iwata, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Nov. 28, 1983, Ser. No. 555,469

Claims priority, application Japan, Nov. 30, 1982, 57-208526

Int. Cl.⁴ B63H *1/26*

U.S. Cl. 416—242 **5 Claims**



1. A marine propeller blade having a leading edge and a trailing edge with a forward face and a rearward face each extending from said leading edge to said trailing edge, said forward face having a generally planar part extending from contiguous to said leading edge toward said trailing edge and merging into a generally recessed cup shaped part extending toward said trailing edge, said blade having its greatest thick-

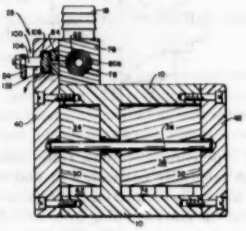
ness in the axial direction in an area contiguous to the point of merger of said planar part and said cup shaped part.

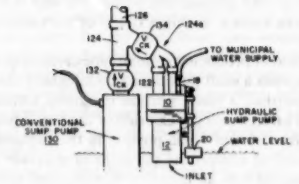
4,552,512

STANDBY WATER-POWERED BASEMENT SUMP PUMP

William Gallup, Palatine, and Detleff W. P. Schmidt, Schaumburg, both of Ill., assignors to Permutare Corporation, Palatine, Ill.

Filed Aug. 22, 1983, Ser. No. 525,121
Int. Cl.[4] F04B *41/06, 49/00, 17/00;* **F04C** *2/00*
U.S. Cl. 417—3 **19 Claims**





1. A municipal water-powered auxiliary basement sump pump system for backing up a residential electric sump pump installation having an existing discharge line, comprising

a water-powered rotary vane pump having a drive chamber and a pump chamber,

slotted drive and pump rotors with a plurality of slidable vanes received therein sealingly engaging the inside walls of the respective chambers,

means for drivingly coupling said drive rotor to said auxiliary pump rotor to impart rotation thereto, said drive chamber having a drive water inlet displaced from a drive water outlet,

said auxiliary pump chamber having a sump water intake displaced from a sump water outlet,

valve means for communicating said drive water inlet with a municipal water supply in response to the sump water level exceeding a predetermined threshold,

exit manifold means for connecting said sump water outlet and said drive water outlet to said existing discharge line of the residential electrical sump pump, and

intake manifold means for supplying said auxiliary pump intake with sump water.

4,552,513

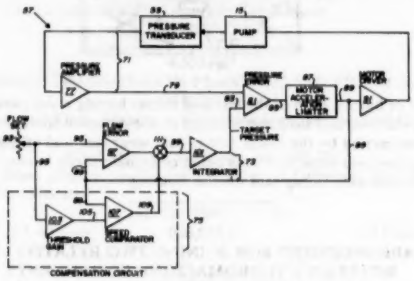
MULTIPLE PISTON PUMP CONTROL

Leslie A. Miller, San Jose, and Thomas J. McCall, Fremont, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 7, 1983, Ser. No. 472,668
Int. Cl.[4] F04B *49/06, 3/00*
U.S. Cl. 417—18 **4 Claims**

1. A method of reducing pulsations in the flow produced by a multiple piston assembly pump of the kind which has a pressure piston assembly and a damper piston assembly connected in series with the outlet of the pressure piston assembly connected to the inlet of the damper piston assembly and which provides an overlap between the flow output of the piston assemblies during a portion of the strokes of the piston assemblies and wherein a sudden pump speed change occurs during the overlap between the flow output of the piston assemblies, said method comprising,

controlling, except during the overlap, the speed of the pump by a first fast control loop which responds to pump output pressure and a second slow control loop which responds to average pump speed,



detecting the sudden pump speed change which occurs during the overlap between the flow output of the piston assemblies, said step of detecting the speed change including detecting the beginning and the end of the actual duration of the time period of the overlap, and

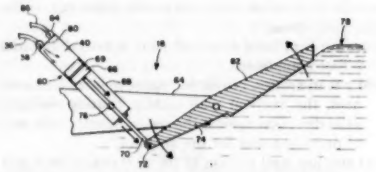
deactivating the slow control loop from controlling the pump speed during the time period of the overlap and running the pump to hold a substantially constant pump output pressure during the duration of the time period until the pump speed returns to the normal speed existing prior to the sudden speed change.

4,552,514

WAVE DRIVEN WORK EXTRACTING DEVICE

Glenn E. Hagen, New Orleans, La., assignor to Williams, Inc., New Orleans, La.

Division of Ser. No. 515,471, Jul. 20, 1983,. This application Mar. 19, 1984, Ser. No. 591,050
Int. Cl.[4] F04B *17/00;* **B01D** *3/10*
U.S. Cl. 417—332 **2 Claims**



1. A work extracting device driven by the wave motion of a fluid, said wave motion having an amplitude spectrum and a wave length spectrum comprising:

a first float having a density such that said first float floats in said fluid and moves in response to said wave motion;

a cylinder;

a piston slideably engaging the interior of said cylinder;

a piston rod fastened and extending from said piston; and

a second float connected to said first float so as to maintain said first and said second floats in position relative to one another while allowing said first and second floats to move in response to said wave motion, said cylinder being

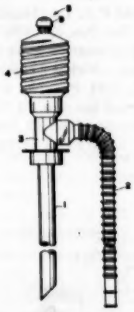
pivotally mounted to said second float, said first float having an arm fixedly connected to and extending longitudinally from said first float a distance beyond the point of connection between said first float and said second float, said piston rod pivotally connected about the end of said arm of said first float, said end of said arm being opposite said first float and beyond the point of connection between said first float and said second float.

4,552,515

HANDY TUBE PUMP

Tsuyoshi Endo, 53, Kamihonmachidori, Numazushi, Shizuokaken, Japan

Filed Sep. 5, 1984, Ser. No. 647,604
Int. Cl.⁴ F04B *45/02, 43/06*
U.S. Cl. 417—472 **1 Claim**



1. A tube pump for transferring liquid from one place to another place, comprising:

a chamber,

a suction tube having a first end connected to the chamber and a second end adapted to be situated in a place where liquid to be transferred is held,

a discharge tube having a first end connected to the chamber and a second end adapted to be situated in another place where liquid is to be transferred,

a bellows member having an opening at an upper end, said bellows member being adapted to be gripped by a user's hand and connected to the chamber to communicate therewith so that when the bellows member squeezed by the hand of the user provides negative pressure to the chamber, liquid is sucked into the chamber through the suction tube, and when the bellows member is squeezed by the hand of the user to thereby provide positive pressure to the chamber, liquid in the chamber is forced to exit from the chamber through the discharge tube, and

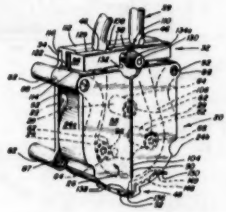
a valve member attached to the opening of the bellows member, said valve member including a threaded cap securely connected to the opening and having an aperture passing therethrough, a cover having a stem extending from the cover, said stem having an end and a diameter smaller than that of the opening so that when the stem is located in the aperture, an annular space is formed inside the aperture, a seal situated around the stem adjacent to the end thereof, and a spring situated around the stem and located between the cover and the threaded cap to urge the cover upwardly so that the annular space is normally sealed by the seal, and when the cover is pushed by the user against the force of the spring, the inside of the bellows member communicates with atmosphere through the annular space.

4,552,516

PERISTALTIC PUMP

Deryl B. Stanley, Huntley, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Jun. 15, 1984, Ser. No. 620,906
Int. Cl.⁴ F04B *43/12, 45/08*
U.S. Cl. 417—477 **11 Claims**



1. A peristaltic pump comprising:

a base plate;

a rotor rotatably supported on the base plate and having at least two compression surfaces rotatable therewith through a predetermined path, the rotor having an axis extending through the base plate;

first and second reaction members having reaction surfaces thereon, the reaction members being mounted on the base plate for movement relative to the base plate between an open position spaced from the rotor to facilitate loading and removal of a compressible fluid flow tube relative to the rotor, and a closed position enabling peristaltic pumping action to be effected on the tube during rotation of the rotor;

means for selectively retaining the reaction members in the closed position, and

gripping means for securing the compressible fluid flow tube in a predetermined position, the gripping means comprising first and second gripping members movable relative to one another, the first gripping member having a pair of generally V-shaped notches formed therein and the second gripping member having a pair of generally V-shaped notches formed therein opening toward the notches on the first gripping member for cooperation therewith in gripping the fluid flow tube;

each of the notches defining an included angle of about 90°.

4,552,517

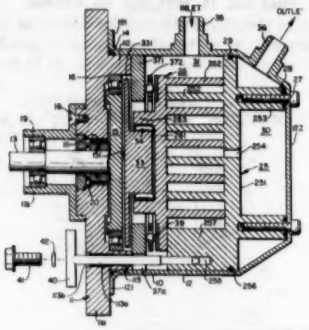
SCROLL TYPE FLUID DISPLACEMENT APPARATUS AND METHOD OF ASSEMBLY

Shigemi Shimizu, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 13, 1983, Ser. No. 513,430
Claims priority, application Japan, Jul. 15, 1982, 57-123522
Int. Cl.⁴ F01C *1/04;* **B23P** *15/00*
U.S. Cl. 418—55 **8 Claims**

1. In a scroll type fluid displacement apparatus including a housing having a front end plate, a pair of scroll members, one of said scroll members being fixedly disposed relative to said housing and having a circular end plate from which a first wrap extends into the interior of said housing and the other scroll member being movably disposed for non-rotative orbital movement within the interior of said housing and having a circular end plate from which a second wrap extends, a rotation preventing mechanism operatively connected to said front end plate and said other scroll member, said first and second wraps interfitting at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, and a driving mechanism extending through said front end plate operatively connected to said other scroll member to effect the orbital motion of said other scroll member whereby said fluid pockets change volume, the improvement comprises said fixed scroll member being formed with a

bore having a predetermined depth and an open end facing said front end plate, said front end plate having a hole extending completely through it to be placed in substantial alignment



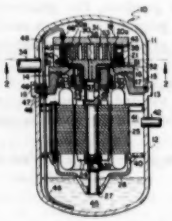
with said bore by an adjustment member inserted into said bore through said hole suring assembly of the apparatus to set the angular relationship between both scroll members.

4,552,518

SCROLL MACHINE WITH DISCHARGE PASSAGE THROUGH ORBITING SCROLL PLATE AND ASSOCIATED LUBRICATION SYSTEM

Robert E. Utter, Genoa, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,848
Int. Cl.[4] F04C *18/04, 29/02*
U.S. Cl. 418—55 **11 Claims**



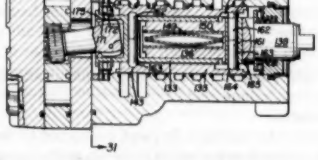
1. A scroll machine for compressing a fluid comprising
a. two scroll plates with intermeshed involute wrap elements defining pockets in which fluid is compressed as the plates orbit relative to each other;
b. means for driving one of the scroll plates in orbital motion relative to the other scroll plate, said driving means including a drive shaft rotatably connected to the one driven scroll plate at a point eccentrically disposed relative to the longitudinal axis of the drive shaft;
c. a shell hermetically enclosing the scroll plates and the driving means;
d. means for dividing substantially the entire volume enclosed by the hermetic shell into a first part that is at suction pressure and a second part that is at discharge pressure;
e. a passage through said driven scroll plate, adjacent the axial center of its involute wrap element and in fluid communication with the second volume enclosed by the shell, said passage being operative to discharge substantially all the fluid compressed by the orbital motion of the scroll plates;
f. an oil reservoir disposed in the second part of the volume enclosed by the shell;
g. means for delivering oil from the oil reservoir to the radially outer ends of the involute wrap elements, said oil thereafter being carried with the fluid as it is compressed and discharged through said passage in said driven scroll plate; and
h. means disposed adjacent the scroll plate for separating the compressed fluid from the oil and for delivering the oil thus separated to one or more bearing surfaces disposed adjacent the passage.

4,552,519

HYDROSTATIC STEERING UNIT WITH CYLINDRICAL SLIDE MEMBER WITHIN CYLINDRICAL VALVE SLEEVE

Hollis N. White, Jr., 243 Pyle La., Hopkinsville, Ky. 42240

Continuation-in-part of Ser. No. 439,058, Nov. 4, 1982, Pat. No. 4,494,916, which is a continuation-in-part of Ser. No. 381,946, May 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 317,501, Nov. 2, 1981, Pat. No. 4,494,915, which is a continuation-in-part of Ser. No. 51,508, Jun. 25, 1979, abandoned. This application Dec. 30, 1983, Ser. No. 567,429
Int. Cl.[4] F04C *2/10;* **F15B** *13/04;* **B62D** *5/08*
U.S. Cl. 418—61 B **11 Claims**



1. In a device having an actuation pin between a cylinder and a surrounding sleeve, the improvement of the actuation pin being solid and split in a plane substantially perpendicular to the longitudinal axis of the pin such that the actuation pin insures actuation and that rotational forces on one end of the pin do not interact with the rotational forces on the other end of the pin.

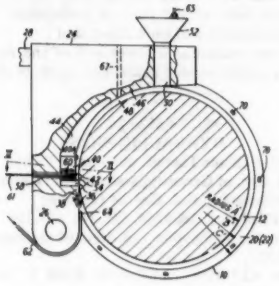
7. In a device utilizing a actuation member mounted in a hole in a cylinder extending across thereof and twin oppositely disposed grooves in a surrounding sleeve for the operable interconnection therebetween, the improvement of an eccentric bushing, and said eccentric bushing in the hole in the cylinder being between said actuation member and the cylinder, such bushing compensating for any misalignment between the hole in the cylinder and the grooves in the surrounding sleeve.

8. In a hydrostatic steering device having a drive shaft, a slide member and a steering means, with a rotational to rotational interconnection between one of the drive shaft and the steering means with the slide member and a rotational to axial interconnection between the other of the drive shaft and the steering means with the slide member, there being a distance between the rotational to rotational interconnection and the rotational to axial interconnection and said slide member having a neutral position, an improved device comprising means to adjust the distance between the rotational to rotational interconnection and the rotational to axial interconnection, this adjustment varying the neutral position of the slide member.

4,552,520
CONTINUOUS EXTRUSION OF METALS

John East, Highworth, and Ian Maxwell, Reading, both of England, assignors to Metal Box Public Limited Company, England

Filed Jan. 27, 1984, Ser. No. 574,512
Claims priority, application United Kingdom, Feb. 3, 1983, 8302951; Apr. 12, 1983, 8309836
Int. Cl.[4] B22F *3/02*; B21C *23/01*
U.S. Cl. 425—79 13 Claims



1. Apparatus for effecting continuous extrusion of metal from a feedstock in particulate, comminuted or solid form, which apparatus includes:

(a) a rotatable wheel member (10) arranged for rotation when in operation by a driving means, said wheel member having formed peripherally thereon a continuous circumferential groove (12);

(b) a cooperating shoe member (24) which extends circumferentially around a substantial part of the periphery of said wheel member and which has a portion (30) which projects in a radial direction partly into said groove with small working clearance (32,34) from the side walls (14) of said groove. said shoe member portion defining with the walls of said groove an enclosed passageway (48) extending circumferentially of said wheel member;

(c) feedstock inlet means (50,52) disposed at an inlet end of said passageway (48) for enabling feedstock to enter said passageway at said inlet end whereby to be engaged and carried frictionally by said wheel member, when rotating, towards the opposite, outlet end of said passageway;

(d) an abutment member (36) carried on said shoe member and projecting radially into said passageway (48) at said outlet end thereof so as to substantially close said passageway at that end and thereby impede the passage of feedstock frictionally carried in said groove (12) by said wheel member, thus creating an extrusion pressure in said passageway at said outlet end thereof;

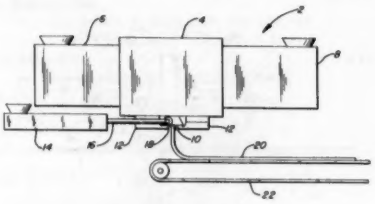
(e) a die member (40,42) carried on said shoe member and having a die orifice opening (42) from said passageway (48) at said outlet end thereof, through which orifice feedstock carried in said groove (12) and frictionally compressed by rotation of said wheel member (10), when driven, is compressed and extruded in continuous form, to exit from said shoe member (24) via an outlet aperture (60,58); and

(f) flash-removing means (70) secured on said wheel member (10) for rotation therewith and arranged to periodically intercept and thereby forcibly detach sections of a waste material, which is flash (68), that is being continuously extruded, when the apparatus is in operation, through one or both of two gaps (32,34) which provide the said small working clearances between the said side walls (14) of said groove (12) and the cooperating surfaces of said shoe member portion (30) which projects radially into said groove.

4,552,521
APPARATUS FOR CO-EXTRUDING A RUBBER STRIP OF ONE MATERIAL WITH A STRIPE OF A SECOND MATERIAL

Don J. Linnstaedter, Waco, Tex., assignor to GenCorp Inc., Akron, Ohio

Filed Dec. 10, 1984, Ser. No. 679,669
Int. Cl.[4] B29C *47/06*, *47/12*
U.S. Cl. 425—131.1 3 Claims



1. Apparatus for extruding a strip having a main body of a first material and a lengthwise extending stripe of a second material, said apparatus including a unit with an entry side and an exit side and a first passageway for said first material having a cross-section of relatively wide width and a relatively narrow height, said first passageway extending through said unit from said entry side to said exit side, and a second passageway for said second material intersecting said first passageway at an orifice located on a portion of a widthwise extending edge of said passageway cross-section and between said entry side and exit side of said unit, means on said entry side of said unit for forcing said first material through said first passageway, and means for forcing said second material through said second passageway and into said first passageway through said orifice, characterized by the improvement comprising,

blocking means interrupting said first passageway at a location upstream from the location where said second passageway interrupts said first passageway, said blocking means extending across the height of said cross-section of said first passageway and over substantially the same widthwise portion of said cross-section as said orifice, but being spaced from the ends of said widthwise extending edge of the cross-section,

a tube extending from said end surface of said unit through said unit parallel to and spaced from said widthwise edge surface of the elongated cross-section of said first passageway, said tube forming the wall of said entry portion of said passageway and having an elongated hole at the location where said exit portion intersects said entry portion of said second passageway, said elongated hole extending parallel to and facing said widthwise edge of the cross-section of said first passageway.

4,552,522
SEGMENTED SPACER RING

Hugh Van Melle, Etobicoke, Canada, assignor to Amhil Enterprises Ltd., Mississauga, Canada

Filed Apr. 26, 1984, Ser. No. 604,303
Claims priority, application Canada, Dec. 23, 1983, 444228
Int. Cl.[4] B29C *1/14*, *17/00*
U.S. Cl. 425—182 7 Claims

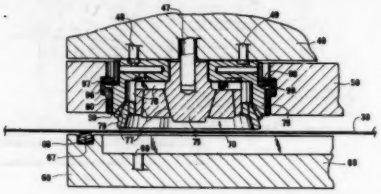
6. The combination of a plate and a spacer ring for effectively reducing the size of a hole in the plate, where the ring has a flange, and the hole is provided, in its inward-facing surface, with a groove complementary to the flange, characterised in that:

the ring is in three segments, arranged so that when the three segments are abutted the segments comprise a complete ring with no gaps;

in that the first and second of the three segments comprise

sufficiently less than the complete ring that in the absence of the third segment the first and second segments can each be assembled into the hole with the respective flanges on the segments fully inserted into the groove, and with respective one ends of each of the first and second segments in an abutment that lies in a plane which includes a radius of said ring;

in that the respective other ends of the first and second segments are not, in substance, divergent radially outwardly, but are shaped as to allow the third segment to be



inserted between them in a generally radial direction until the flange on the third segment is fully inserted into the groove, the ends of the third segment then being in an abutment with the respective other ends of the first and second segments that lies in a plane parallel to the plane which includes said radius;

in that the plate is the stripper plate of a vacuum forming apparatus for moulding articles in sheet plastic;

and in that the stripper plate has several holes, and each hole is provided with a respective one of the said spacer rings.

4,552,523

FOOD SHAPING APPARATUS

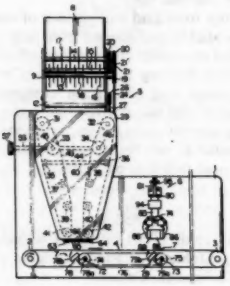
Kisaku Suzuki, 1-19-8, Toshida, Nerima-ku, Tokyo, Japan

Division of Ser. No. 408,974, Aug. 17, 1982, Pat. No. 4,460,611. This application Jul. 3, 1984, Ser. No. 627,408

Claims priority, application Japan, Aug. 20, 1981, 56-123394; Oct. 30, 1981, 56-163285; Nov. 26, 1981, 56-190261; Dec. 25, 1981, 56-197719

Int. Cl.[4] A23P *1/00*; A22C *7/00*

U.S. Cl. 425—225 **18 Claims**



1. A food shaping apparatus for shaping a foodstuff comprising:

a hopper for introducing said foodstuff thereinto;

conveyor means for conveying said introduced foodstuff;

loosener means for loosening the foodstuff which is being conveyed by the conveyor means;

scraper means for scraping the loosened foodstuff from said conveyor means;

a casing for operatively supporting the conveyor means, loosener means and scraper means, said casing being at its top connected with a bottom of the hopper,

a pair of plates located one behind the other and to face each other with a spacing therebetween;

a plurality of pairs of rollers journalled to laterally opposite sides of said plates, said plurality of pairs of rollers comprising a top pair and a bottom pair, said plurality of pairs of rollers being disposed such that the spacing between each rollers of a pair of rollers progressively decreases from said top pair down to said bottom pair;

a pair of feed belts for feeding downwardly the scraped foodstuff while being progressively compressed therebetween, said belts being passed over the rollers on the respective sides of the pairs of rollers and movable in opposite directions to each other; and

cutter means located at a lower end of the feed belts for cutting a predetermined amount or length of the foodstuff.

4,552,524

HYDRAULIC PRESS

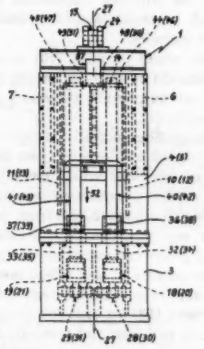
Klaus Schmidts; Dieter Therolf, and Ulrich Weber, all of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 28, 1984, Ser. No. 687,190

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 8337753[U]

Int. Cl.[4] B29C *17/00, 1/00*; B30B *11/00*

U.S. Cl. 425—406 **6 Claims**



1. An hydraulic press, such as for pressing plastic mats reinforced with glass fibers into formed parts, with a stationery cross-piece and a slidable cross-piece as well as a press drive which drive for moving the slidable cross-carriage includes at least one adjusting cylinder with a working stroke corresponding to the range of movement of the press and at least two press cylinders of short stroke couplable to the slidable cross-piece through a coupling, characterized in that for coupling each press cylinder to the slidable cross-piece a coupling rod is provided along with at least one stationery clamping jaw and at least one pressable clamping jaw cooperating with the coupling rod.

4,552,525

DIE EJECTOR ASSEMBLY FOR MULTI-STAGE FORMING MACHINES

Franz Stehr, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Eumuco Aktiengesellschaft fur Maschinenbau, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,552

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322944

Int. Cl.[4] B29C *7/00*; B29F *1/14*

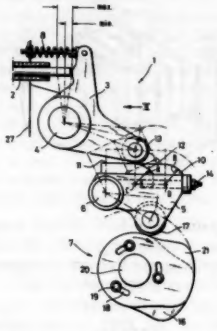
U.S. Cl. 425—422 **8 Claims**

1. An ejector assembly for a multi-stage forming machine

having each forming stage including a die ejector that is separately adjustable as to its extent of lift, said assembly comprising:

(a) an ejector pin, an ejector lever member and a drive means for the ejector lever member,

(b) an intermediate lever member disposed between the ejector lever member and the drive means,



(c) said intermediate lever member being common to several ejector lever members,

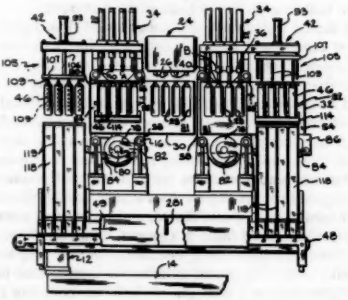
(d) said intermediate lever member having adjustable able French curve cam surfaces for each forming stage of the forming machine.

4,552,526

BLOW MOLDING MACHINE WITH MOLD SHUTTLE STRUCTURE

Robert X. Hafele, Baton Rouge, La., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Jul. 18, 1983, Ser. No. 514,435
Int. Cl.⁴ B29D *23/03*
U.S. Cl. 425—322 **4 Claims**



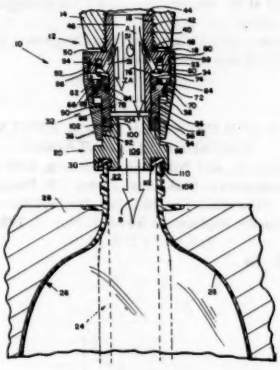
1. In blow molding apparatus for manufacturing containers wherein said apparatus has a blow molding station, a parison forming station to one side of said blow molding station, a container trim station at the other side of said blow molding station, parallel tie rods, platens mounted on said tie rods for movement toward and away from each other and multiple station mold carrying slides mounted on said platens for shuttle movement between a first position below said parison forming and blow molding stations and a second position below said blow molding and trim stations; at least one blow head at said blow molding station operable to be moved downwardly into engagement with a mold on said slides for blowing a parison in said mold to a configuration forming a container in said second position of said slides, and means directly supporting said blow head on at least one of said tie rods to provide for a common support of said mold and said blow head on said tie rods so that in response to downward movement of said blow head into engagement with said mold no reaction movements are generated tending to separate said blow head and said mold.

4,552,527

NOZZLE ASSEMBLY

Burnis L. Hunter, Mableton, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.

Filed Oct. 9, 1984, Ser. No. 659,161
Int. Cl.⁴ B29C *17/07*; B29F *5/00*
U.S. Cl. 425—535 **8 Claims**



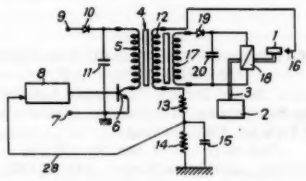
1. A nozzle assembly of a blow molding machine for introducing a pressurized gas into an opening of a parison to conform the parison to the shape of a mold, the nozzle assembly comprising: connecting means for attachment to an outlet of pressurized gas, contacting means for contacting the opening of the parison including a deformable seal means for preventing the escape of pressurized gas, and means defining an expansible chamber between the connecting means and the contacting means for ensuring engagement between the contacting means and the parison opening.

4,552,528

CURRENT GENERATOR FOR THE SUPPLY AND DETECTION OF OPERATION OF A GAS BURNER AND CONTROL DEVICE APPLYING SAME

Albert Gaiffier, Le Puy, France, assignor to Societe Anonyme: Construction Electriques R.V., Saint Germain Laprade, France

Filed Apr. 3, 1984, Ser. No. 596,448
Claims priority, application France, Apr. 7, 1983, 83 05892
Int. Cl.⁴ F23N *5/12*
U.S. Cl. 431—25 **5 Claims**



1. A fuel ignition means to provide an ignited flame comprising:

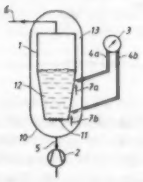
a transformer having a primary winding and a first and a second secondary windings;
energization means for providing a periodic excitation signal to said primary winding and gated by a gating signal;
flame probe means positioned at least partially within said flame connected to one end of said first secondary;
resistive return means connected to the other end of said first secondary, wherein at least part of said resistive return includes a capacitor connected thereacross, providing said gating signal to said energization means;
fuel valve for controlling the fuel flow; and
means to energize said fuel valve connected to said second secondary, wherein
the presence of said flame provides a gating signal to enable said energization means, wherein energy is produced at the second secondary for energization of said fuel valve;
the absence of said flame inhibits the gating signal thereby inhibiting the flow of fuel.

4,552,529

DEVICE FOR PRESSURE MEASUREMENT IN A PRESSURIZED CONTAINER

Roine Brännström, and Nils-Erik Söderberg, both of Finspong, Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden

Filed Oct. 18, 1983, Ser. No. 542,929
Claims priority, application Sweden, Nov. 1, 1982, 8206195
Int. Cl.[4] F27B *15/00*
U.S. Cl. 432—58 **3 Claims**



1. A pressurized fluidized bed combustion plant comprising:
a first container for containing a particulate mobile material;
a second container surrounding said first container;
means for feeding pressurized air to a space formed between said first container and said second container;
means for introducing said pressurized air into said first container so as to fluidize said particulate material;
sensing means connected to said first container by a tube means passing through said space between said first and second containers; and,
a bleeding means connected to said tube means for bleeding a portion of said pressurized air from said space to said first container via said tube means, said bleeding means being dimensioned and located relative to said space and said tube means so that the flow rate of said bleed portion is sufficient to prevent said particulate material from blocking said tube means but insufficient to prevent a sensing of the pressure in said first container by said sensing means.

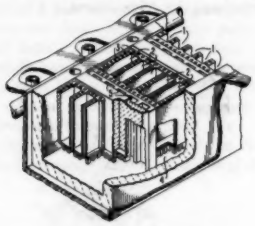
4,552,530

RING SECTION BAKING FURNACE AND PROCEDURE FOR OPERATING SAME

Kare Gunnes, Asker; Tormod Naterstad, Årdalstangen, and Olav Lid, Sunndalsora, all of Norway, assignors to Ardal og Sunndal Verk a.s., Oslo, Norway

Filed Nov. 7, 1983, Ser. No. 549,546
Claims priority, application Norway, Nov. 5, 1982, 823695
Int. Cl.[4] F27B *5/02, 5/16*
U.S. Cl. 432—192 **11 Claims**

1. In a ring section furnace of the type including a plurality of sections connected in series, each said section comprising a plurality of parallel pits defined by spaced parallel pit walls, and vertical ducts provided in each said pit wall, with flue gases being passed through said ducts to achieve heat treatment by indirect heat exchange with material to be treated placed in said pits, the improvement comprising:



means for segregating said ducts of each said pit wall into separate groups of ducts and thereby for causing the flue gas to pass both upwardly and downwardly through respective said ducts in each said pit wall.

4,552,531

GAUGED ROOT CANAL CONDENSER SPREADER

Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20910

Filed Nov. 16, 1984, Ser. No. 671,908
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—147 **7 Claims**

1. A dental instrument for root canal work, comprising:
a handle, said handle having geometrically configured socket-like cavities in each end thereof, said handle being elongated and rod-like in configuration and having suitable knurling on the outside surface thereof;
a first dental instrument component, said first dental instrument component having a capability for performing dental condensing operations in prepared root canals of teeth, said first dental instrument component having a first end and a second end, said first end of said first dental instrument component being geometrically configured into a shaft-like coupling end, said geometrically configured shaft-like coupling end being so sized and configured so as to be removably inserted into one of said geometrically configured socket-like cavities in said handle by a snap fit, said second end of said first dental instrument component being configured into a tapered condenser portion to perform said condensing operations in said prepared root canals, said first dental instrument component between said geometrically configured shaft-like coupling end and said tapered condenser portion thereof has a short body member portion, a tapered transition portion, and a bend portion, in that sequence, said geometrically configured shaft-like coupling end, said short body portion, said tapered transition portion, said bend portion, and said tapered condenser portion all being integral and monolithic in that sequence;
a second dental instrument component, said second dental instrument component having a capability for performing dental spreader operations in prepared root canals of teeth, said second dental instrument component having a first end and a second end, said first end of said second dental instrument component being geometrically configured into a shaft-like coupling end, said geometrically configured shaft-like coupling end being so sized and

configured so as to be removably inserted into the other of said geometrically configured socket-like cavities in said handle by a snap-fit, said second end of said second dental instrument component being configured into a tapered portion to perform said spreader operations in said root canals, said second dental instrument component between said geometrically configured shaft-like coupling end and said tapered spreader portion thereof has a short body member portion, a tapered transition portion, and a bend portion, in that sequence, said geometrically configured shaft-like coupling end, said short body portion, said tapered transition portion, said bend portion, and said tapered spreader portion all being integral and monolithic in that sequence; and

a plurality of color code markings, said plurality of color code markings being applied to said second end of said first and second dental instrument components, respectively, to indicate matching pairs and size and depth measurements in said prepared root canals.

4,552,532

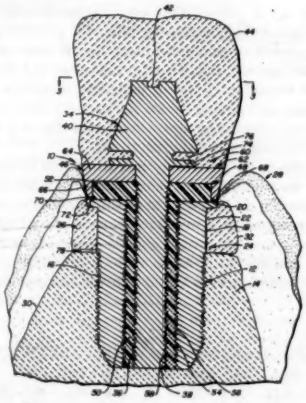
OSTEOCORRECTIVE DENTOALVEOLAR IMPLANT SYSTEM

Peter G. Mozsary, 413 Skyline Drive, Vallejo, Calif. 94590

Filed Dec. 12, 1983, Ser. No. 560,199

Int. Cl.[4] A61C *8/00*

U.S. Cl. 433—173 **9 Claims**



1. A dental implant system intended for placement in an alveolus of the jaw bone comprising:

a. a root including means intended for fixing the root to the jawbone said root having a portion intended for extending into the alveolus, said root further including a surface having a transverse dimension in relation to said root portion extending into the alveolus, said root surface intended for being adjacent the outer surface of the jawbone;

b. a post including means for supporting said post to said root;

c. a crown connected to said post;

d. means for cushioning forces applied to said crown, said cushioning means including a resilient member having a first element placed between said post and said portion of said root intended for extending into the alveolus; and a second element placed adjacent said surface of said root adjacent the outer surface of the jawbone; and

e. means for attenuating relative movement between said crown and said root upon the application of force to said crown, said attenuating means including a spacer disposed adjacent said second element of said resilient member such that said second element of said resilient member lies between said surface of said root adjacent the outer surface of the jawbone and said spacer, said spacer including a surface intended for being capable of directly contacting said root surface adjacent the outer surface of said jawbone, thereby attenuating the relative movement between said crown and said root.

4,552,533

GUIDED MISSILE FIRE CONTROL SIMULATORS

Dennis A. Walmsley, Hurstpierpoint, England, assignor to Invertron Simulated Systems Limited, England

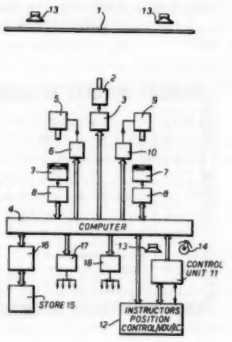
PCT No. PCT/GB82/00325, § 371 Date Jul. 11, 1983, § 102(e) Date Jul. 11, 1983, PCT Pub. No. WO83/01832, PCT Pub. Date May 26, 1983

PCT Filed Nov. 15, 1982, Ser. No. 515,053

Claims priority, application United Kingdom, Nov. 14, 1981, 8134375

Int. Cl.[4] F41G *7/00*

U.S. Cl. 434—12 **23 Claims**



1. A guided missile fire control simulator in which a plurality of image projectors are combined in a projection system under the control of a digital computer to display on a common screen:

a view of a selected combat area produced by a terrain image projector;

a view of a target superimposed on said view of said combat area and produced by a target image projector;

a representation of the appearance of a guided missile in flight, as seen by the operator, which representation is superimposed upon the terrain view from a missile image projector, and which is occulted whenever the theoretical flight path takes the missile out of the view of the operator, and which is terminated by a visual representation of the effects of the missile warhead exploding only if the explosion or the effects thereof would be visible to the operator;

said target image projector and said missile image projector each being caused to project their image to respective positions on the screen by respective associated projection directing system controlled by said computer;

an instructor's control station providing means for supervising an exercise by the production of relevant control signals;

and at least one missile control station providing means for the operation to produce missile launch and guidance control signals;

said computer being supplied with exercise control data comprising;

stored information constituting an elevation database defining the displayed terrain;

stored information defining the visibility of any position in

the displayed terrain to the operator and thus constituting a visibility database;

stored information concerning the missile flight characteristics and capabilities to constitute a weapon system database;

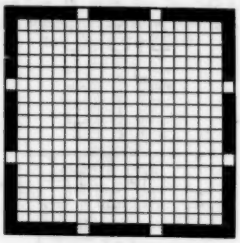
and said computer using said information to translate said control signals received from an operator's control unit at and after launching of a missile into a resultant theoretical flight path for said missile and producing signals to control said projection directing system of said missile image projector to cause the projected image to follow the calculated path across the displayed terrain and to terminate the missile flight by an image projection representing the effect of explosion of the missile warhead if within the operator's field of view, but inhibiting such projection if theoretically outside the operators field of view.

4,552,534

VISUAL COMMUNICATION SYSTEM DEVICES

Ralf Krempel, 2400 Pacific Ave., San Francisco, Calif. 94115

Filed Aug. 3, 1984, Ser. No. 637,289
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—170 **4 Claims**



1. A visual communication system comprising;

a board covered with a gridlike surface marked on its face so that each side of said board contains an equal number of squares, the edges of said board depicting markings designating groups of square locations, and

a plurality of information carrier means to be mounted on said board, each of said information carrier means having a plurality of surfaces, each surface of one of said means being of a different color,

the information carrier means being positioned on a particular square with a particular color surface uppermost, such that the combination of square location and color surface designates a specific alphabet letter according to a predetermined code.

4,552,535

MECHANICAL ASSEMBLY FOR AUDIO-VISUAL TEACHING MACHINES

Steve Steffel, Northfield, N.J., assignor to Frank Warren Ferguson, Arlington, Va.

Filed May 18, 1984, Ser. No. 611,779
Int. Cl.[4] G09B *7/06*
U.S. Cl. 434—315 **13 Claims**

1. An improved audio-visual apparatus for projecting spaced visual information segments and for reproducing correlated audio information, comprising:

a mounting plate;

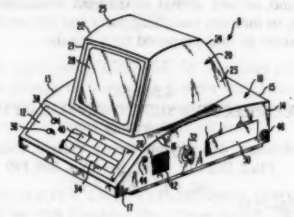
cartridge receiving means on said mounting plate for receiving an audio-visual cartridge which incorporates an audio information storage disc and an annular holder for securing visual information segments surrounding said disc;

first drive means for rotatably driving said disc;

second drive means for rotatably driving said annular holder to advance said visual information segments along an annular path;

an optical system mounted on said mounting plate for projecting a selected visual information segment, said optical system including a light source, means for projecting light from said source through a fixed portion of said annular path, and an adjustable elongated focusing arm pivotally mounted at a first end and adjustably mounted at a second end on said mounting plate and including a lens mounted near said second end of said elongated focusing arm, said lens being located adjacent said fixed portion of said annular path and being moveable about an elongated radius to provide substantially linear motion for the lens;

sound reproducing means including transducer means se-



cured to a transducer arm rotatably and pivotally mounted on said mounting plate for providing selective engagement of said transducer means with said storage disc to reproduce audio information stored thereon, said sound reproducing means including manually adjustable indexing and cueing means for rotating said arm to position said transducer means over said disc and for raising and lowering said transducer; and

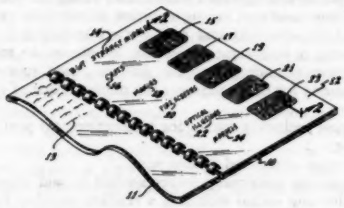
control means for selectively energizing said first and second drive means and said cueing means in response to audio information on said disc to position selected visual information segments in said fixed portion of said annular path to cause said selected segments to be projected, and to drive said disc to produce audio information corresponding to said projected visual information segments.

4,552,536

PROGRAMMED LEARNING TEXTBOOK

Andrew F. Kay, 320 Serpentine Dr., Del Mar, Calif. 92014, and David A. Kay, 1745 Valdez Dr., La Jolla, Calif. 92037

Filed Jul. 12, 1984, Ser. No. 630,298
Int. Cl.[4] G09B *3/06*
U.S. Cl. 434—327 **13 Claims**



1. A programmed learning text having a plurality of pages and a self-test question, comprising:

a plurality of possible answers to said question, the answers being printed on one of said pages, at least one of said ansers being a correct answer to said question;

means on said page adjacent said answers for identifying each correct answer by touch; and

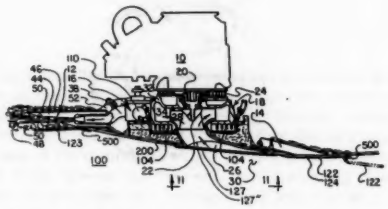
camouflaging means on said page for visually camouflaging said identifying means.

4,552,537

MARINE PROPULSION DEVICE WITH ENGINE HEAT RECOVERY SYSTEM AND STREAMLINING HULL CLOSURES

Hendrick W. Haynes, FID&D, P.O. Box 66152, Seattle, Wash. 98166

Filed Jun. 20, 1979, Ser. No. 50,199
Int. Cl.⁴ B63H *11/08*
U.S. Cl. 440—47 **11 Claims**



1. In a boat propelled directionally by an inboard marine water jet propulsion system for boats supported by the boyant property of water when said jet is operating, said boat comprising:

(a) A boat;

(b) A motor located therein;

(c) A water pumping means coupled operably to said motor;

(d) Said water pumping means afixed to said boat to allow the drawing of fluid (**100**) from the outside of the boat and through an intake region (**26**) into the jet pump and

(e) By the operation of said pumping means the water is discharged through a defined pathway to allow the expression of said drawn fluid through a nozzle to the outside of said boat where the result of said expression of the fluid through the nozzle is the propulsive reaction of the boats travel apposed to the direction of said fluid expression;

wherein the improvement is comprising:

(1) Said nozzle means being operably connected by a thrust transmission tube means (**38**) to a pumping means (**18**) including an impeller casing for housing a water impelling means (**28**) therein;

(2) Said water impelling means pumping water (**100**) at a rate sufficient to induce turbulent flow of the water when it is pumped in a passageway (**34**);

(3) Said passageway (**34**) including means for heating its interior surface to a temperature above that of the water (**100**) being drawn in by said pumping means (**18**), said means for heating being in thermal communication with said impeller casing;

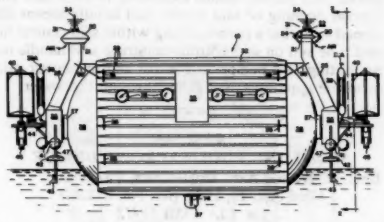
(4) Wherein the energy lost by a driving motor operatively connected to said pump in transporting a water stream through said pump is reduced by the effect of increasing the boundry layer water temperature, thus lowering the pressure change necessary to draw gas out of solution adjacent to said boundry when said water is in a turbulent flow condition.

4,552,538

MULTIDIRECTIONAL AMPHIBIOUS SAFETY VEHICLE

Vincent Galluzzo; Angela Galluzzo, and Victor T. Galluzzo, all of 8548 Oakleigh Rd., Baltimore, Md. 21234

Filed Apr. 16, 1984, Ser. No. 600,402
Int. Cl.⁴ B63H *5/00*
U.S. Cl. 440—99 **10 Claims**



1. A multidirectional amphibious safety vehicle, comprising:

an outer cylindrical shell having two opposite ends and a longitudinal axis therethrough;

a stationary central pipe having two opposite ends and extending along the longitudinal axis of the outer cylindrical shell;

means, secured around the central pipe, for rotating the outer cylindrical shell about the central pipe so that the safety vehicle moves forward and backward over land, water, and other terrain;

motor means, mounted on at least one of the two opposite ends of the central pipe, for driving the safety vehicle sideways on water;

auxiliary wheel means, mounted on the two opposite ends of the central pipe, for providing balance whenever the safety vehicle travels over land and other terrain; and

sail means, mounted on the two opposite ends of the central pipe, for driving the safety vehicle sideways on water.

4,552,539

HYDROPLANE APPARATUS

James M. Hoenstine, 3201 Alamo Dr., Orlando, Fla. 32805, and Thomas E. Ray, 2512 Trentwood Blvd., Orlando, Fla. 32812

Division of Ser. No. 424,105, Sep. 27, 1982, Pat. No. 4,451,239. This application May 24, 1984, Ser. No. 614,108
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.
Int. Cl.⁴ B63B *7/08*
U.S. Cl. 441—66 **11 Claims**

7. A recreational hydroplane apparatus for towing behind a boat or the like, said apparatus comprising:

(a) an annular inflatable tube member having a round, central hole extending therethrough;

(b) a unitary flexible cover surrounding the outer periphery of said tube, said cover having an annular central opening therein concentric with said central hole in said tube, said opening in said cover having a substantially smaller dimension than the outer periphery of said tube, said cover further including a closed, substantially flat bottom along a side opposite said annular central opening thereof, said

cover and said tube being dimensioned such that said bottom is drawn tightly across said central hole in said tube when said tube is inflated;

(c) a fabric tow strap having each end portion thereof sewn only to, and extending along the plane of said flat bottom, said tow strap including a loop to which a tow rope may be fastened; and wherein

(d) flexible handle means sewn at two points on said flexible cover, said handle means extending toward said annular central opening of said cover, said handle means dimensioned such that a person sitting within said central hole in said tube and on said bottom can grasp said handle means, permitting said person to control and maneuver said hydroplane apparatus as it skims through the water.

4,552,540

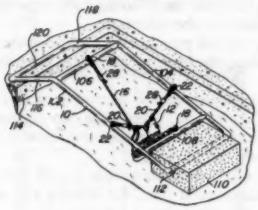
SWIMMING POOL EXERCISE DEVICE

Eric Bass, 10 Walton Ave., Doylestown, Pa. 18901

Filed Jan. 19, 1984, Ser. No. 572,267

Int. Cl.⁴ A63B *69/12*

U.S. Cl. 441—129 **16 Claims**



1. A buoyant vest for use in a swimming pool, said vest being made of a buoyant material and being adapted to be worn by a person, said vest having first vest loops attached adjacent the shoulder portions thereof and second vest loops attached adjacent the waist thereof, a frame detachably attached to a side of a swimming pool, said frame having side struts and at least one cross strut, at least one first anchoring loop attached to said cross strut, at least one second anchoring loop attached to one of said side struts, whereby adjustable security lines can be attached between one of said vest loops and one of said anchoring loops and between another of said vest loops and another one of said anchoring loops.

4,552,541

TOY BUILDING BLOCK WITH ELECTRICAL CONTACTING PORTIONS

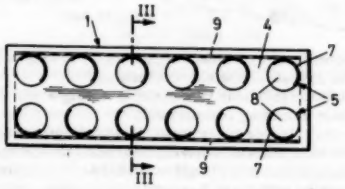
Peter Bolli, Grabenackerstrasse 46, CH-6312 Steinhausen, Switzerland

Filed Feb. 9, 1984, Ser. No. 578,415

Claims priority, application Switzerland, Feb. 14, 1983, 814/83

Int. Cl.⁴ A63H *33/04*

U.S. Cl. 446—91 **16 Claims**



1. A toy building block having on one face thereof at least one row of mechanical coupling pins and opposite thereto mechanical counter-coupling sockets, at least a plurality of said coupling pins in said row having electrically conducting and electrically insulating regions angularly spaced from each other, said electrically conducting region of each of said pins in said row being disposed at the same angular orientation, and at least one contact member within said block and forming a portion of said socket, said contact member being electrically connected to said electrically conducting regions of a plurality of coupling pins in said row and having electrically conducting surfaces extending in a direction parallel to the longitudinal direction of said row of coupling pins.

4,552,542

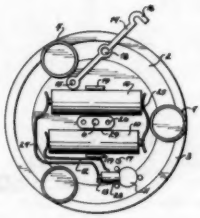
SPINNING DISC TOY

Marjan Reysman, 49 Jack Rd., Williamsville, N.Y. 14221

Filed Nov. 7, 1984, Ser. No. 668,971

Int. Cl.⁴ A63H *1/32*

U.S. Cl. 446—254 **9 Claims**



1. A string-activated illuminable spin disc toy comprising two half-disc sections complementary to each other, a battery and bulb compartment securing means, and string-activating means attached to both of said half-disc sections, one of said sections containing in its interior portion said battery and bulb compartments, said securing means comprising an inner and outer securing means, said outer securing means comprising a centrally positioned annular conduit extending transversely through at least a portion of both of said sections and adapted to receive therethrough a bolt means thereby connecting said half-disc sections together to form a disc-like toy, said inner securing means comprising a movable bar adapted to be moved and locked into position over substantially the width of said battery compartment, said inner securing means comprising a substantially centrally located aperture aligned with said conduit to receive said bolt.

4,552,543

TORSIONALLY ELASTIC COUPLING WITH AN IMPROVED CHARACTERISTIC CURVE

Franz J. Wolf, and Hubert Pletsch, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,287

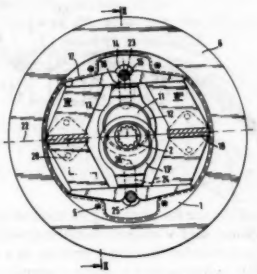
Claims priority, application European Pat. Off., Sep. 14, 1983, 83109087.3

Int. Cl.⁴ F16D *3/76, 13/64*

U.S. Cl. 464—83 **11 Claims**

1. A torsionally elastic coupling for transmitting torque between input and output members comprising coaxial first and second coupling plates (**1, 2**) respectively connected to said output and input members; at least one spring link connected between said coupling plates, said plates being twistable with respect to one another through said spring link (**18**); at least one motion-changing link (**11**) connected to transmit force between said first and second coupling plates through said spring link; at least one bearing plate (**17**) positioned in contact with said spring link (**18**) and connected with the first coupling plate, wherein said motion-changing link (**11**) is cou-

pled to the bearing plate (17) so that when rotation of the second coupling plate relative to the first coupling plate occurs, said bearing plate moves radially as a result of said motion-changing link rotating with the second coupling plate to selectively tighten or relax said spring link (18) depending on the rotational direction of said second coupling plate, wherein said bearing plate (17) is formed as a thick and heavy centrifugal weight (17) having an inert mass, said centrifugal weight



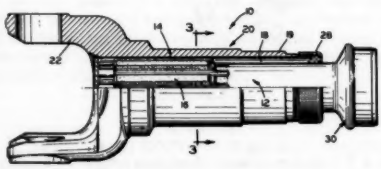
being dimensioned so that as input load changes increase as a function of rotational speed of said input member, said coupling exhibits a progressively increasing twisting softness caused by centrifugal movement of the bearing plate as a result of the mass of the centrifugal weight bearing plate so that an angle of twist between said first and second coupling plates progressively increases for a predetermined load change as a function of increasing rotational speed.

4,552,544

DRIVE LINE SLIP JOINT ASSEMBLY

John A. Beckman, Toledo, Ohio, and David E. Sills, Marion, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1982, Ser. No. 453,077
Int. Cl.[4] F16C *3/03*; F16D *3/06*
U.S. Cl. 464—162 **4 Claims**



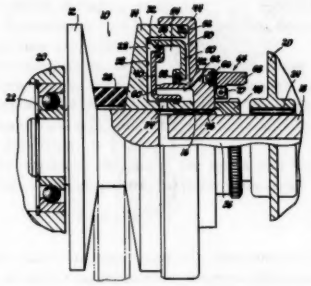
1. A drive line slip joint component having a plurality of axially extending splines, each spline comprising an axially extending face, each face having a circumferentially extending width, at least two of said faces each comprising one resilient axially extending protuberance, each of said faces further comprising a low-friction coating bonded thereto, each resilient protuberance comprising an integral portion of said coating, said coating generally having a constant thickness over said face, said thickness within the range of 0.007 to 0.014 inch, and said protuberance extending 0.001 to 0.003 inch above the surface of said coating said protuberances being circumferentially spaced apart about said component, said protuberances providing means for enhancing the dynamic balancing of said component.

4,552,545

CENTRIFUGAL PRESSURE COMPENSATOR FOR A VARIABLE DRIVE PULLEY

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 18, 1984, Ser. No. 621,857
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—16 **2 Claims**



1. A mechanism providing pressure compensation for a dual area control member in a rotary V-belt drive having adjustable pulleys with a drive belt, said mechanism comprising; a movable pulley sheave including a hub portion; a housing mounted for unitary rotation with said pulley sheave and being secured for permitting relative linear movement on said pulley sheave; a first annular piston slidably disposed on said housing and cooperating with said housing and said pulley sheave to form a first pressure chamber; a separator wall slidably disposed on said pulley sheave and said first piston and cooperating therewith to form a compensating chamber; a second pressure chamber formed between an annular end wall of said pulley sheave and said separator wall with said end wall being operative as a second annular piston; fluid flow passage means for directing pressurized fluid to said first and second pressure chambers and said first and second annular pistons whereby said pulley sheave is urged to move relative to said housing; and first and second restricted flow passages for directing fluid to and from said compensating chamber respectively, said first restricted flow passage being in fluid communication with the pressurized fluid in one of said pressure chambers, said fluid in said compensating chamber being at a pressure level determined in part by the rotary speed of said pulley sheave and acting on said first annular piston in opposition to centrifugally generated fluid pressure in said pressure chambers and thereby reduce the axial loading of the movable pulley sheave.

4,552,546

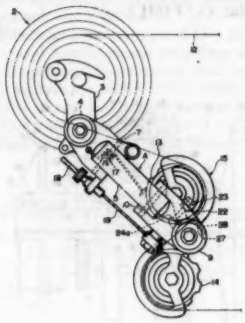
DEVICE FOR CONTROLLING THE TENSION OF A TRANSMISSION CHAIN IN AN EXTERNALLY MOUNTED SPEED CHANGER FOR A BICYCLE

Noritoki Ishikawa, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Jun. 27, 1983, Ser. No. 507,636
Claims priority, application Japan, Jun. 25, 1982, 57-110352
Int. Cl.[4] F16H *7/08, 11/08*
U.S. Cl. 474—82 **4 Claims**

1. In a speed changer for a bicycle provided on a bracket connected to a hub of its rear wheel, and including a plurality of sprocket wheels having different diameters, a transmission chain, a moveable member, a pair of parallel links pivotally connected at one end to said bracket and pivotally connected at the other end to said moveable member whereby said moveable member is supported for movement parallel to the axis of said hub, spring means on said bracket for biasing said moveable member in one axial direction a chain positioning frame

supported rotatably on said moveable member and carrying a guide pulley and a tension pulley for guiding said chain about one of said sprocket wheels while maintaining said chain under tension, and a torsion spring provided on said moveable member for urging said frame in the direction which enables said



chain to be tensioned, the improvement which comprises a stepless adjustable control mechanism provided on said frame for steplessly controlling the force of said torsion spring to control the tension on said chain, said torsion spring having one end engaged with said mechanism and the other end connected to said moveable member.

4,552,547

STRAW CHOPPER DRIVE

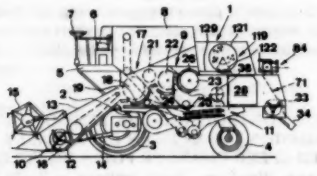
José A. C. L. Carnewal, Eeklo, and Daniël M. Van Overschelde, Roeselare, both of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 22, 1984, Ser. No. 582,497

Claims priority, application United Kingdom, Feb. 25, 1983, 8305217

Int. Cl.⁴ F16H *7/08*

U.S. Cl. 474—101 **19 Claims**



1. Drive means comprising driving means, driven means, and intermediate means located between the driving means and the driven means such that there is an angled line of drive between the driving means and the driven means, first flexible drive transmission means extending between the driving means and the intermediate means, and second flexible drive transmission means extending between the intermediate means and the driven means, first tensioning means operable to move the intermediate means in a first direction to tension the first flexible drive transmission means, and second tensioning means operable to move the intermediate means in a second direction to tension the second flexible drive transmission means.

4,552,548

V-BELT TRANSMISSION APPARATUS

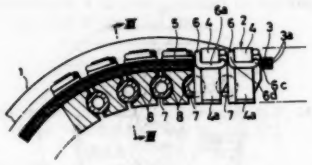
Torao Hattori, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1984, Ser. No. 669,172

Claims priority, application Japan, Nov. 7, 1983, 58-171320[U]

Int. Cl.⁴ F16G *5/00*

U.S. Cl. 474—201 **10 Claims**



1. A V-shaped device for engaging an endless belt in a V-belt power transmission, said V-shaped metallic device comprising:

(a) a V-shaped member having a groove in a wall of each arm of the V, wherein said V-shaped member is adapted to have the endless belt positioned between the arms of the V and wherein said grooves are positioned below the plane of the inner surface of the belt in the V; and

(b) a stopper means having a middle portion extending between the arms of said V-shaped member outside of the belt and end portions engaging the grooves in the wall of the arms of said V-shaped member, wherein said stopper means prevents said V-shaped member from coming off the belt.

4,552,549

V-BELT TRANSMISSION DEVICE

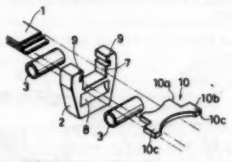
Torao Hattori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,357

Claims priority, application Japan, Mar. 8, 1983, 58-32268[U]; Mar. 8, 1983, 58-36650; Apr. 16, 1983, 58-66327

Int. Cl.⁴ F16G *1/28*

U.S. Cl. 474—202 **7 Claims**



1. In a V-belt transmission device in which a plurality of substantially V-shaped metal members and a plurality of resilient metal members are alternately mounted to an endless metal belt member made of band steel and are in contact with each other to consitutute a V-belt which is subjected to a tension between a driving V-pulley and a driven V-pulley, thereby effecting a torque transmission between both the pulleys, each of said V-shaped metal members being provided with a substantially U-shaped groove directed to the outside, each of said resilient metal members being formed as a hollow roller to engage with recessed surfaces which are formed in opposing surfaces of a pair of said V-shaped metal members and said V-shaped metal members and said resilient metal members are fastened together at their outer peripheries by said metal belt member, said V-belt transmission device characterized in that a pair of right and left engaging grooves are formed at inward wall of arm end portions of each of said U-shaped grooves

formed in said V-shaped metal members and stop members are each formed in a plate having a narrow portion and at least one wide portion, each of said stop members being engaged with said engaging grooves with said narrow portion.

4,552,550

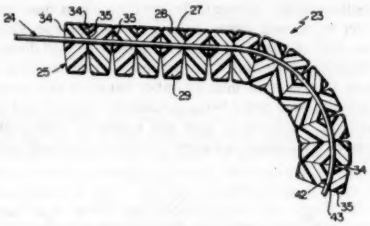
BELT CONSTRUCTION, TRANSVERSE BELT ELEMENT THEREFOR AND METHOD OF MAKING THE SAME

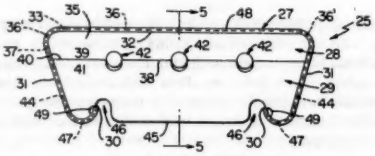
Anderson W. Howerton, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 30, 1984, Ser. No. 575,434

Int. Cl.⁴ F16G *1/22*

U.S. Cl. 474—242 **22 Claims**





1. In an endless power transmission belt construction comprising an endless flexible carrier means that has a longitudinal axis and a plurality of transverse belt elements assembled on said carrier means, each said belt element comprising a plurality of parts secured together to define opening means passing transversely therethrough and receiving said carrier means therein, the improvement wherein one of said parts of each said belt element comprises a generally C-shaped clip that in a direction substantially transverse to said longitudinal axis of said carrier means snaps over and substantially encircles and holds the remaining parts of the respective belt element in their assembled relation.

4,552,551

DOUBLE- AND BOTTOM-SEAM BAG-MAKING METHOD AND APPARATUS

Karl Dreckmann, Hennef-Altenbödingen, Fed. Rep. of Germany, assignor to M. Lehmacher & Sohn GmbH Maschinenfabrik, Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Jan. 6, 1983, Ser. No. 455,919

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201248

Int. Cl.⁴ B31B *23/00*

U.S. Cl. 493—194 **4 Claims**

1. An apparatus for making bags from a multilayer synthetic-resin strip workpiece, the apparatus comprising:

transport means for conveying the workpiece longitudinally in a transport direction along a path;

an upper welding element along the path having

an upper upstream welding tool extending across the path,

an upper downstream welding tool generally parallel thereto, and

a seat extending parallel to and between the two upper tools in said upper welding element;

a first blade releasably fittable in the seat of the upper welding element and projecting downward from the upper tools when in the seat;

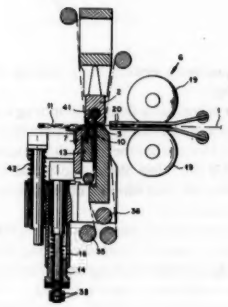
respective lower upstream and downstream welding tools vertically aligned with the upper upstream and downstream tools;

means for heating at least one of the upstream tools and at least one of the downstream tools;

stacking means including at least one pin movable in the lower downstream tool between a position beneath same to a position projecting above same;

bottom-seaming means including a further blade positionable between the lower tools and displaceable between a position beneath same into a position projecting above said lower tools into said seat upon the removal of the first blade therefrom;

means for vertically displacing the upper and lower tools with the workpiece between them from outer positions



toward one another to closely juxtaposed inner positions to weld the workpiece together along upstream and downstream seams at the respective tools and to cut the workpiece across with the first blade between the seams when heater means is heating the respective tools, the blade is in the seat, and the pin lies below the lower tools for double seaming and to cut through and form end seams in the workpiece with said second blade when the heater means is not heating the respective tools, the blade is not in the seat, and the pin is above the lower tools for bottom seaming, and for displacing said tools away from one another to free the severed downstream end section of the workpiece;

relatively stiff spring means nondisplaceable transversely of the path and engageable with the upstream lower tool for resisting downward displacement of same from the inner position with a relatively great spring force; and

relatively soft spring means supporting the downstream lower tool on the upstream lower tool for resisting downward displacement of the former relative to the latter with a relatively small spring force.

4,552,552
PUMP SYSTEM FOR USE WITH DIALYSIS AND LIKE APPARATUS

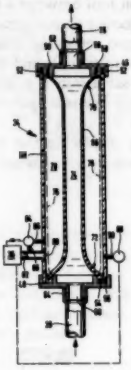
Hans-Dietrich Polaschegg, Oberursel, and Bernd Mathieu, Spiesen, both of Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,645

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205449

Int. Cl.[4] A61M *1/03*

U.S. Cl. 604—4 **16 Claims**



15. A pumping system for pumping the blood of a patient comprising:

a rigid casing and a flexible diaphragm within the casing, the diaphragm defining and separating a working chamber and a blood chamber which is expandable and contractable for pumping blood said blood chamber having blood inlet means and blood outlet means in fluid communication therewith;

means including a displaceable chamber for supplying the working chamber with a working fluid for expanding and contracting the working chamber so that the blood chamber is contracted and expanded;

low pressure limiting valve means in fluid communication with the working chamber responsive to pressure within the working chamber for preventing pressure below a predetermined low pressure in the working chamber by venting the working chamber, and high pressure limiting valve means in fluid communication with the working chamber responsive to pressure within the working chamber for preventing pressure above a predetermined high pressure in the working chamber by venting the working chamber, whereby the supplying means and the blood pumping means operate in phase at pressures between the predetermined low and high pressures within completion of one cycle of expansion and contraction after start up regardless of phase differences at start up.

4,552,553
FLOW CONTROL VALVE

Rudolf R. Schulte; Gary P. East, both of Santa Barbara; Marga M. Bryant, and Alfons Heindl, both of Goleta, all of Calif., assignors to Pudenz-Schulte Medical Research Corp., Santa Barbara, Calif.

Continuation of Ser. No. 510,381, Jun. 30, 1983, abandoned, which is a continuation of Ser. No. 208,514, Nov. 20, 1980, abandoned. This application Jan. 30, 1984, Ser. No. 574,997

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—9 **29 Claims**

1. A surgically implantable flow control valve for controlling the flow of fluid from one portion of the human body to another, said valve comprising:

a substantially rigid polypropylene base of unitized construction including a plate having a generally planar inlet surface and a generally planar outlet surface, a tubular inlet connector integral with said plate, and a tubular outlet connector integral with said plate;

an inlet passageway through said base, said inlet passageway originating at an open end of said inlet connector and terminating at an inlet port situated on said inlet surface of said plate;

an outlet passageway through said base, said outlet passageway originating at an outlet port adjacent said outlet surface and terminating at an open end of said outlet connector;

a resilient dome substantially overlying said base and said inlet port, said dome having an arch-shape similar to one-half of a sphere, the inner surface of said dome being smooth and forming a seal against an upper surface of said base to create an inlet chamber between said dome and said base, said dome being deformable toward said base by external pressure so that the extent of deformation is limited by contact between said dome and said base;

a mounting pad generally underlying said base and interacting with the edges of said dome to substantially encase said base in connection with said dome, said mounting pad including suture holes to allow said valve to be fixedly attached to a specific location on the human body;

an outlet chamber between said outlet surface and said mounting pad;

a plate passageway permitting fluid communication between said inlet chamber and said outlet chamber; and

a flow control member including a central support and a resilient membrane, said central support being securely attached to said base and extending therefrom into said outlet chamber to support said membrane, said membrane being generally arch-shaped and resiliently biased to normally contact said outlet surface generally along the outer edges of said membrane in a manner surrounding said plate passageway and forming a releasable seal between said outlet surface and the outer edges of said membrane, said outlet surface being sufficiently rigid to maintain a proper valve seat for the outer edges of said membrane despite pressure applied to said inlet surface caused by contact of said dome with said inlet surface when said dome is fully deformed, said membrane being formed of an elastomer material to prevent sticking with said polypropylene base.

4,552,554
INTRODUCING CATHETER

Arnold S. Gould, Bedford, Mass.; Gary Sawicki, Thompson, Conn., and Michael A. Ciannella, Marlboro, Mass., assignors to Medi-Tech Incorporated, Watertown, Mass.

Filed Jun. 25, 1984, Ser. No. 624,053

Int. Cl.[4] A61B *17/00*; A61M *5/00*

U.S. Cl. 604—51 **16 Claims**

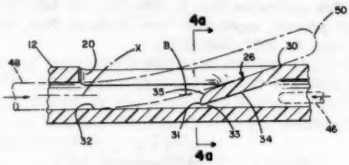
1. In an introducing catheter comprising: a tube defining a lumen and having proximal and distal open ends, said tube having a tapered tip and decreased lumen size at said distal end, said catheter enabling distal entry of a first relatively small diameter guidewire, said tube further having a side port larger than the distal diameter of said lumen through which a larger,

second guidewire, advanced within said tube from said proximal end, can emerge.

the improvement wherein

a ramp is disposed within said tube at the distal end of said side port, said ramp being inclined distally toward said side port.

the distal end of said ramp being fixed to said tubing adjacent to said side port and the proximal end of said ramp being disposed adjacent to the inner wall of said tubing in the



region opposite said side port in a manner to permit passage therepast of said first, relatively small guidewire.

said ramp thereby being adapted to permit said first guidewire to be advanced proximally through said tubing from the distal tip past said side port and said ramp being adapted to deflect the tip of said second, larger diameter guidewire advanced distally through said tubing from the proximal end, to cause said second guidewire to emerge from said lumen via said side port.

4,552,555

SYSTEM FOR INTRAVENOUS DELIVERY OF A BENEFICIAL AGENT

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 289,082, Jul. 31, 1981, abandoned. This application Oct. 19, 1981, Ser. No. 312,491

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclosed.

Int. Cl.[4] A61M *5/14*

U.S. Cl. 604—56 **19 Claims**

1. An intravenous delivery system for administering a drug formulation to a patient, comprising in combination:

(a) a reservoir of a pharmaceutically acceptable intravenously administrable fluid;

(b) a formulation chamber comprising:

(1) a wall surrounding a lumen;

(2) an inlet in the wall that communicates with the reservoir to permit fluid to flow from the reservoir into the formulation chamber;

(3) a beneficial intravenously administrable drug in the formulation chamber, said drug present in an amount for performing a beneficial program, and which drug forms a drug formulation with the intravenously administrable fluid that enters the chamber;

(4) a drug release rate membrane in the formulation chamber formed of a material that releases drug formulation from the chamber concomitantly with the passage of intravenously administrable fluid that flows through the chamber; and,

(5) an outlet in the wall that permits drug formulation and the intravenously administrable fluid to leave the formulation chamber.

4,552,556

PARENTERAL CONTROLLED THERAPY

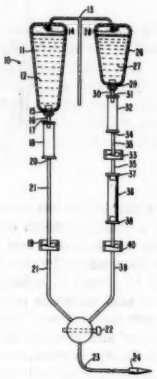
John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 542,466, Oct. 17, 1983, Pat. No. 4,493,702, which is a continuation of Ser. No. 325,206, Nov. 27, 1981, Pat. No. 4,432,756. This application Jan. 4, 1985, Ser. No. 689,103

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.[4] A61M *5/14*

U.S. Cl. 604—80 **4 Claims**



1. A parenteral delivery set for administering a beneficial agent formulation to a warm-blooded animal, the delivery set comprising:

(a) a primary tube for the flow of a parenterally acceptable fluid therethrough;

(b) a secondary tube for the flow of a parenterally acceptable fluid therethrough;

(c) a formulation chamber in communication with the secondary tube, the formulation chamber comprising:

(1) a wall that surrounds a lumen;

(2) an inlet for letting a fluid into the formulation chamber;

(3) a beneficial agent delivery device in the formulation chamber, the delivery device comprising an inner mass transfer conductor, a beneficial agent in the mass transfer conductor, and a membrane that surrounds the mass transfer conductor for releasing beneficial agent into the formulation chamber;

(4) an outlet for letting an agent formulation leave the formulation chamber; and,

(d) a common tube in communication with the primary tube for receiving fluid from the primary path, and in communication with the secondary tube for receiving agent formulation from the secondary tube.

4,552,557

INFLATABLE UTERINE HEMOSTAT

Avvari Rangaswamy, Stevens Hospital, Welch, W. Va. 24801

Filed Oct. 21, 1983, Ser. No. 544,059

Int. Cl.[4] 61F *5/00*

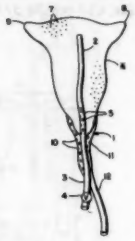
U.S. Cl. 604—96 **6 Claims**

1. An inflatable uterine device to control uterine bleeding comprising:

(1) an insertion means which facilitates insertion of the device into the uterus,

(2) an inflatable portion attached to and surrounding said insertion means which, when inflated, substantially conforms to the shape of the uterus, said inflatable portion having disposed thereon at its proximal end twin apical projections designed to conform to and block the entrances to the fallopian tubes, the wall of said inflatable portion being of a thickness sufficient to exert pressure on the uterine wall to control uterine bleeding,

(3) a tubular inflation channel connected to and in communication with the interior of said inflatable portion, said tubular inflation channel containing distally located pores through which said inflatable portion can be inflated and



deflated once the device has been inserted into the uterus, said tubular inflation channel being adapted at its distal end by means which permit said tubular inflation channel to be sealed once said inflatable portion has been inflated and unsealed to permit an inflating fluid to be bled from the interior of said inflatable portion, and

(4) a second tubular channel, separate from said tubular inflation channel and attached to the outer surface of the wall of said inflatable portion, containing in its walls proximally located pores to permit drainage of blood and other uterine debris once the device has been inserted into the uterus.

4,552,558

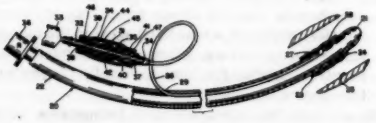
PRESSURE WARNING, INDICATING AND APPLYING MONITOR FOR CUFF TYPE INDWELLING DEVICES

Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Filed Jul. 14, 1983, Ser. No. 513,645

Int. Cl.[4] A61M *25/00*

U.S. Cl. 604—100 **9 Claims**



9. In combination with an indwelling device having an inflatable cuff at the distal end and a tubule adapted to extend outside the patient's body to inflate the cuff:

a tubule extension adapted to be connected between a source of air under pressure and the proximal end of said tubule, said extension including a one-way valve to prevent back flow;

a pilot balloon of non-stretchable material, adapted to be inflated when the cuff is inflated, said pilot balloon extending around said tubule extension and being inflatable by air apertures therein, said pilot balloon being of generally spherical shape when fully inflated;

and a pressure monitoring balloon of stretchable, resilient material, enclosing said pilot balloon in an airtight sealed chamber and extending therearound on said tubule extension, said pressure monitoring balloon progressively changing from elongated cylindrical, to oval, to spherical configuration as said cuff and pilot balloons are progressively expanded.

4,552,559

APPLICATORS

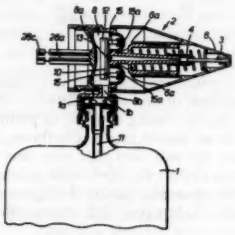
John H. Donaldson; Robert Brunswick, and Andrew J. Foulkes, all of Melbourne, Australia, assignors to Wellcome New Zealand Limited, Auckland, New Zealand

Continuation of Ser. No. 441,430, Nov. 15, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,731

Claims priority, application New Zealand, Nov. 24, 1981, 199049; Aug. 30, 1982, 201756

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—198 **43 Claims**



1. An applicator including:

a reservoir for matter to be applied;

an applicator head comprising a chamber and elongate needle;

the needle being at least partially surrounded by a generally elongate proboscis mounted for axial movement over the needle;

at least one valving means being provided between the chamber and the needle;

further valving means being provided between the reservoir and the chamber;

triggering means being provided;

actuation of said triggering means causing matter to be applied to be passed from the reservoir into the chamber;

the proboscis being so mounted relative to the chamber and the needle, that on predetermined axial movement of the proboscis over the needle, at least an end of said needle is at least partially exposed and means between the chamber and needle is opened and means is provided to cause matter to pass from the chamber through said needle.

4,552,560

RESEALABLE ADHESIVE TAB FASTENER

Ludwig Tritsch, Wilmette, Ill., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 236,406, Feb. 23, 1981, abandoned. This application Dec. 21, 1983, Ser. No. 566,751

Int. Cl.[4] A41B *13/02;* **A61F** *13/16*

U.S. Cl. 604—390 **5 Claims**

1. A resealable adhesive tab fastener means suitable for use on a disposable diaper comprising:

(a) a carrying tape segment having an innerface and an outerface and including a fixed end secured to the diaper and a free end which includes a gripping means at the terminating end of the free end portion; and

(b) a transferable holding means adhesively, but releasably, carried on the innerface of the free end of said carrying tape segment, said holding means being a tape segment having an adhesive coated face on the face opposite the face adhesively, but releasably attached to said carrying tape segment, said holding means being at least co-extensive with the free end of said carrying tape segment and

having a gripping means at the terminating end nearest the gripping means of said carrying tape segment said gripping means being provided by the absence of adhesive on the tape segment at the terminating end thereof, a finger-lift comprising a separate piece of material secured to the adhesive surface, or an adhesive-to-adhesive turned over portion of the tape segment at the terminating end thereof, said gripping means allowing the opening of said fastener without application of pressure to the body of the wearer of said diaper.

4,552,561

BODY MOUNTED PUMP HOUSING AND PUMP ASSEMBLY EMPLOYING THE SAME

James B. Eckenhoff, Los Altos; John R. Peery, Palo Alto, and Felix A. Landrau, Milpitas, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 23, 1982, Ser. No. 452,523

Int. Cl.[4] **A61J** *7/00;* **A61M** *5/00*

U.S. Cl. 604—896 **48 Claims**

8. A pump assembly adapted to be mounted on the body of a subject comprising, in combination:

(a) pump housing means, said housing means comprising:

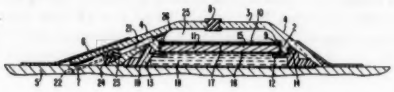
(i) internal receptacle means defined by the internal top and side surfaces of said housing;

(ii) exterior top and side surfaces;

(iii) an exterior bottom surface at the bottom, body proximal end of said exterior side surface; and

(iv) passageway means extending through said housing and terminating at one end proximate the internal top surface of said receptacle means and at another end proximate the bottom end of said exterior side surface;

(b) an expansible, fluid impermeable membrane disposed within said receptacle means, dividing said receptacle means into upper and lower portions;



(c) fluid imbibing pump means in said lower portion, said pump means having outlet means in fluid communicating relationship with said membrane; and

(d) sealing means providing a fluid tight seal between said membrane, said fluid imbibing pump means and said housing means, whereby material discharged from said outlet means will be confined between said fluid imbibing pump means and said membrane.

4,552,562

PROCESS FOR PREVENTING THE GELATION OF CONCENTRATED AQUEOUS PHOTOACTIVATOR SOLUTIONS

Werner Preiswerk, Binningen, and Beat Bruttel, Böckten, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Mar. 19, 1984, Ser. No. 590,929

Claims priority, application Switzerland, Mar. 25, 1983, 1641/83

Int. Cl.[4] C09B *47/20;* C11D *3/39;* D06L *3/12;* C08J *5/22*

U.S. Cl. 8—101 14 Claims

1. A process for preventing the gelating of a concentrated aqueous photoactivator solution containing a sulfonated zinc or aluminum phthalocyanine, which comprises passing a crude solution containing said photoactivator, when preparing said concentrated solutions, through a semipermeable asymmetrical membrane having a pore diameter of 1 to 500 Å and which consists of cellulose acetate which is modified by reaction with an ionic compound which contains hydroxyl-reactive groups, or which consists of polyacrylonitrile or a copolymer of acrylonitrile and another ethylenically unsaturated monomer, and which is modified by reaction with hydroxylamine and subsequent reaction with a polyfunctional monomer selected from the group consisting of cyclic carbonimide halides, isocyanates, isothiocyanates and N-methylol compounds, then a polyfunctional polymer selected from the group consisting of polyethyleneimine, polyvinyl alcohol, polyvinylamine or polyvinyl aniline, and finally with an ionic compound which contains hydroxyl- or amino-reactive groups.

4,552,563

COMPOSITION FOR THE ALKALINE BLEACHING OF TEXTILES CONTAINING PEROXYAMINE

Bernard Dubreux, Francheville le Bas; Jackie Emeraud, Jouy en Josas; Gerard Tatin, Mulhouse, and Jean-Pierre Schirmann, Oullins, all of France, assignors to Atochem, France

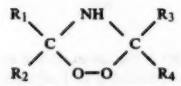
Filed Sep. 13, 1984, Ser. No. 650,778

Claims priority, application France, Sep. 20, 1983, 83 14911

Int. Cl.[4] D06L *3/00*

U.S. Cl. 8—107 6 Claims

1. A composition for the alkaline bleaching of textiles during washing comprising a washing powder and at least one peroxide derivative of the general formula:



(I)

where R_1, R_2, R_3, and R_4 are hydrogen, a linear alkyl radical containing from 1 to 12 carbon atoms, a cycloalkyl or branched alkyl radical containing from 3 to 12 carbon atoms, or an aromatic hydrocarbon radical having from 6 to 12 carbon atoms; R_1 and R_2 and/or R_3 and R_4, respectively, capable of forming a cycloalkyl radical having from 3 to 12 carbon atoms.

4,552,564

USE OF IMPROVED STARCH-POLYVINYL ALCOHOL COMPOSITION AS A TEXTILE SIZE

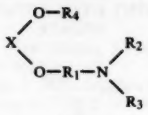
Edward D. DeBoer, Sauk Village, and Kenneth R. Yahl, Orland Park, both of Ill., assignors to American Maise-Products Company, Hammond, Ind.

Filed Jul. 27, 1984, Ser. No. 635,367

Int. Cl.[4] C08G *18/08*

U.S. Cl. 8—115.6 13 Claims

1. A composition for sizing yarn which comprises a derivative starch having the following structural formula:



wherein X is starch, R_1 is selected from the group consisting of alkylene and hydroxyalkylene, R_2 and R_3 are each selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl and hydrogen and R_4 is a hydroxyalkyl; and polyvinyl alcohol, wherein the composition has a ratio of derivative starch: polyvinyl alcohol in the range of from about 1:9 to 9:1.

4,552,565

HAIR DYES: DIRESORCYL SULPHIDE, SULPHOXIDE OR SULPHONE COUPLING AGENTS

Norbert Maak, Neuss, and Edgar Lieske, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,040

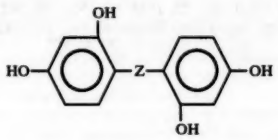
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340829

Int. Cl.[4] A61K *7/13;* D06P *1/32;* C11D *3/40*

U.S. Cl. 8—409 18 Claims

1. A composition of matter of the developer-coupler type for the dyeing of hair comprising:

(a) at least one coupler of the formula



(I)

wherein Z is a sulfur atom, an >SO group or an $>SO_2$ group, or a cosmetically acceptable salt of said coupler of formula I; and

(b) at least one developer, said developer being capable of developing a color shade when oxidatively coupled with said coupler of the formula I or with said salt of said coupler.

4,552,566

GLOBULOUS PRODUCTS OF SUBLIMING SUBSTANCE, ITS MANUFACTURING PROCESS AND MANUFACTURING APPARATUS

Kouji Kita, Tokyo; Kohei Itakura, Chiba, and Shigeo Mitsuhashi, Narita, all of Japan, assignors to Ise Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 460,058

Claims priority, application Japan, Jan. 21, 1982, 57-6859

Int. Cl.[4] C01B *7/14*

U.S. Cl. 23—313 R 2 Claims

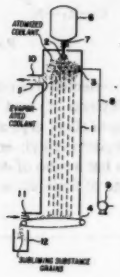
1. A method of producing globulous products of a subliming substance, which comprises:

melting said subliming substance;

discharging said subliming substance through a nozzle so as to form a plurality of droplets of 0.3 to 5 mm diameter;

discharging a non-soluble inert coolant liquid having a boiling point lower than said subliming substance and atom-

ized to a size of 10 to 2500μ so as to contact and cool said droplets; and



forming said globulous products so as to have a diameter of 0.3 to 5 mm.

4,552,567

PRESSURE ROLLER APPARATUS FOR BRIQUETTING CUT MATERIAL OF BIOLOGICAL ORIGIN SUCH AS GREEN CROPS, WOOD FLAKES OR PEAT

Alfred T. Nielsen, No. 4 Lyngskraenten, 2840 Holte, Denmark

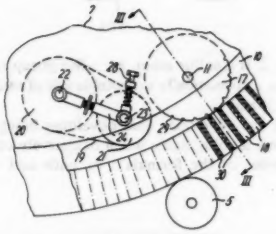
PCT No. PCT/DK84/00033, § 371 Date Dec. 5, 1984, § 102(e) Date Dec. 5, 1984, PCT Pub. No. WO84/04276, PCT Pub. Date Nov. 8, 1984

PCT Filed Apr. 25, 1984, Ser. No. 686,262

Claims priority, application Denmark, Apr. 27, 1983, 1872/83

Int. Cl.⁴ B30B *11/20, 3/00*

U.S. Cl. 44—13 **4 Claims**



1. Pressure roller apparatus for briquetting of cut and dried material of biological origin, such as green crops, wood flakes or peat, through radial die openings (18) formed in the bottom of an inwardly open material supply channel (10) provided in a circular rotary ring, the cross section of the channel at the briquetting zone being virtually filled out by a pressure roller (17) journalled on a stationary axis, and the channel being associated with a mechanism (19, 21) for precompressing the material upstream of this pressure roller, c h a r a c t e r i z e d in that the ring with die openings (18) is localized at, and firmly connected to, the rear end of a rotary drying drum (1), and in that the precompression mechanism comprises an endless band (19) coplanar with the material supply channel (10) and passing around both a stationarily journalled disc (20) and a disc (21) located nearer to the pressure roller (17), the latter being entered into the material supply channel and being adjustable and elastically urged against its bottom, and the endless belt being drivable at the same peripheral speed as the channel bottom.

4,552,568

METHOD FOR PREPARING COAL-WATER SLURRY

Taizo Igarashi; Hisao Higuchi, and Shingo Yamazaki, all of Hyogo, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,089

Claims priority, application Japan, Jul. 24, 1982, 57-129496

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **10 Claims**

1. A method for preparing a coal-water slurry comprising the divided addition of dispersing agent or multi-step addition of dispersing agent during grinding in a process for preparing a coal-water slurry by the wet grinding of coal in water.

2. A method for preparing a coal-water slurry as in claim 1, wherein the dispersing agent is a cationic surface active agent, an anionic surface active agent, a nonionic surface active agent or an amphoteric surface active agent.

3. A method for preparing a coal-water slurry as in claim 2, wherein the dispersing agent additionally comprises an alkaline substance.

4,552,569

N-HYDROCARBYLHYDROCARBYLENEDIAMINE CARBOXYLATE AND LUBRICANTS CONTAINING SAME

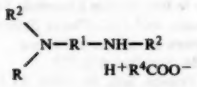
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 508,980, Jun. 29, 1983, Pat. No. 4,511,482. This application Jan. 22, 1985, Ser. No. 693,446

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—71 **11 Claims**

1. A liquid fuel composition comprising a major proportion of a liquid fuel and a friction reducing amount of a compound of the formula:



wherein R is a hydrocarbyl group containing 6 to 20 carbon atoms, R^1 is a C_2 to C_3 hydrocarbylene group, R^2 is selected from the group consisting of hydrogen and

wherein at least one R^2 is the latter group in which R^3 is selected from the group consisting of hydrogen and a C_1 to C_6 alkyl group, and R^4 is a C_1–C_{20} hydrocarbyl group.

4,552,570

ADSORBENT FRACTIONATOR WITH AUTOMATIC CYCLE CONTROL AND PROCESS

Barton A. Gravatt, Homer, N.Y., assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 351,677, Feb. 23, 1982, abandoned, which is a continuation of Ser. No. 267,964, May 27, 1981, abandoned, and Ser. No. 145,938, May 2, 1980, abandoned. This application Feb. 8, 1984, Ser. No. 577,728

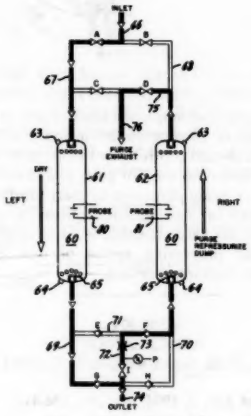
Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—20 **13 Claims**

1. Apparatus having a sorbent bed for alternately adsorbing and thereby reducing the concentration of first gas in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas and then regenerating the sorbed bed by desorption of adsorbed first gas without application of heat, comprising, in combination, a vessel; a chamber therein for a bed of sorbent having a preferential adsorptivity for the first gas and that is regenerated by desorption of first

gas without application of heat; a line for delivering influent gas at an inlet end of said bed; a line for delivering effluent gas from an outlet end of said bed; a capacitor positioned between the inlet and outlet ends of the bed and having two conductors of selected surface area spaced from each other a sufficient distance to define a space sized to accommodate a volume of sorbent as the dielectric whose change in first gas content, detected as a function of dielectric constant, causes a change in capacitance thereof; means for closing off the influent flow of gas after a predetermined first time interval; means responsive to the change in capacitance to give a first signal in response to a first predetermined capacitance indicating a first selected first gas content has been reached at the end of said time interval; means for depressurizing the sorbent bed and for introducing a purge gas to regenerate the sorbent in response to the first signal; and means for returning the sorbent bed to the adsorption mode after a second predetermined time interval whereby depressurization and purge is omitted under low loading conditions.

12. Apparatus for reducing the concentration of first gas in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, comprising, in combination, a vessel; a chamber therein for a bed of sorbent having a preferential affinity for the first gas; a line for delivering influent gas at an inlet end of said bed; a line for delivering effluent gas from an outlet end of said bed; a capacitor comprising an open array of at least three flat parallel sheet conductors interleaved with alternate sheets connected together in conducting relation and arranged in the bed with the planes of the sheet substantially in-line with the flow in a manner to directly intercept a substantial portion of the gas flow through the bed, the sheet conductors being coated with an electrically insulating layer so that the capacitor is isolated from the conductivity of said sorbent, the sheets being of selected surface area and spaced from each other a sufficient distance to define a space sized to accommodate a volume of sorbent as the dielectric change in first gas content, detected as a function of dielectric constant, causes a change in capacitance thereof; means responsive to the change in capacitance to give a signal when a selected capacitance indicating a selected first gas content is reached or exceeded; and means for regenerating the sorbent bed in response to the signal.

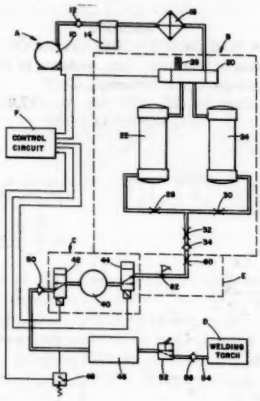


4,552,571

OXYGEN GENERATOR WITH TWO COMPRESSOR STAGES

Fernand J. Dechene, New Britain, Conn., assignor to VBM Corporation, Louisville, Ky.

Filed Apr. 5, 1984, Ser. No. 596,892
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—21 **20 Claims**



1. A method of separating a primary product gas from a gaseous mixture, the method comprising:

supplying the gaseous mixture at a first relatively low pressure alternately to first and second molecular sieve beds which each contain a physical separation medium which selectively adsorbs at least one adsorbable component of the mixture and passes the primary product gas and causing the adsorbable component to be removed from the other of the first and second beds;

drawing the primary product gas from adjacent the molecular sieve beds to increase a pressure drop thereacross such that the primary product gas has a second relatively low pressure adjacent the molecular sieve beds;

limiting the second relatively low pressure to positive pressures;

selectively adjusting a rate at which primary product gas is drawn from the molecular sieve beds to adjust the purity thereof;

increasing the pressure of the primary product gas from the second relatively low pressure to a relatively high pressure;

storing the increased pressure primary product gas in a storage tank; and,

maintaining the storage tank generally at the relatively high pressure.

8. An apparatus for supplying a primary product gas at a relatively high pressure, the apparatus comprising:

a first compressor means for providing a gaseous mixture at a first relatively low pressure;

a valving means for alternately channelling the gaseous mixture from the first compressor means alternately to a first end of each of at least two molecular sieve beds for separating the primary product gas from the gaseous mixture;

a second compressor means which receives the primary product gas from a second end of the molecular sieve beds for maintaining pressure adjacent the second end of the molecular sieve beds at a second relatively low pressure which is less than the first relatively low pressure and for supplying the primary product gas to a primary product outlet at a relatively high pressure which relatively high pressure is greater than both the first and second relatively low pressures; and,

a second compressor start-up valve means for selectively (a) enabling the second compressor to be operated without load for a start-up duration and (b) after the start-up duration, channelling the primary product gas from the sieve beds through the second compressor means to downstream equipment, the start-up valve means being operatively connected with the sieve beds second end and the second compressor means, whereby the second compressor means is able to be started without load.

4,552,572

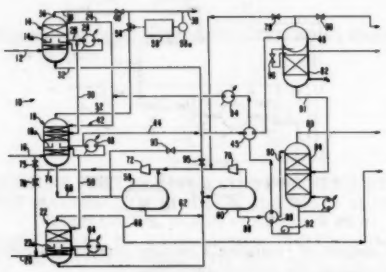
PROCESS FOR DESULFURIZATION OF FUEL GAS

Lionel S. Galstaun, Houston, Tex., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Jul. 26, 1983, Ser. No. 517,885

Int. Cl.[4] B01D *47/00*

U.S. Cl. 55—36 **15 Claims**



1. In a system for removal of acid gases from a first gas available at super atmospheric pressure, rich in carbon dioxide and containing hydrogen sulfide, and a second gas rich in carbon monoxide, containing carbon dioxide at a partial pressure lower than in said first gas, and containing hydrogen sulfide, the process comprising the steps of:

contacting the first gas with a physical absorption solvent having a high selectivity for hydrogen sulfide in countercurrent flow of solvent and the first gas wherein said solvent absorbs carbon dioxide and hydrogen sulfide in a first stage and said solvent absorbs carbon dioxide but not hydrogen sulfide in a second stage and using part of the solvent from the second stage in the first stage, separating the solvent containing carbon dioxide and hydrogen sulfide from the first stage and recovering a hydrogen rich gas from the second stage;

separately contacting said second gas with another part of the solvent from the second stage under conditions sufficient to cause said solvent containing carbon dioxide to extract hydrogen sulfide from said second gas and to release carbon dioxide; and

separating the desulfurized second gas from the solvent containing hydrogen sulfide for use as a fuel.

4,552,573

DUST SUPPRESSOR APPARATUS

Bruce T. Weis, Anoka; Nash N. Helmy, St. Louis Park; David E. Tweet, and Bruce W. Moechnig, both of Minneapolis, all of Minn., assignors to Cargill Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 357,787, Mar. 12, 1982, abandoned. This application Nov. 30, 1983, Ser. No. 556,312

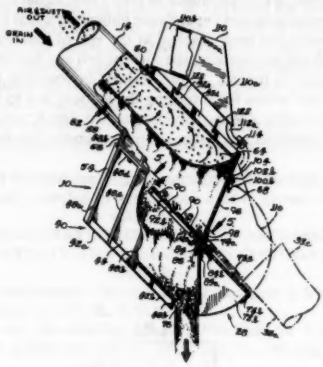
Int. Cl.[4] B01D *45/02, 45/08*

U.S. Cl. 55—312 **11 Claims**

1. Apparatus for use in discharging particulate material while suppressing discharge of dust, said apparatus comprising, in combination:

a housing defining an internal chamber and having an inlet opening enabling particulate material to be introduced into said internal chamber, said housing having a primary discharge opening enabling particulate material to be discharged from said chamber by gravity, said housing being made of a plurality of modular sections secured together so as to define said internal chamber, said modular sections being mutually releasable to facilitate disassembly of said housing,

a suppressor control gate mounted on said housing for movement between a first position adapted to prevent discharge of material through said discharge opening and a second discharge position enabling gravity discharge through said discharge opening,



and means biasing said suppressor control gate to its said first position until a predetermined quantity of particulate material acts on said control gate to overcome said biasing means and open said control gate, said control gate and biasing means being operative to exert substantially constant pressure on the particulate material discharging through said discharge opening so as to enable bulk discharge while preventing egress of dust ladened air through said discharge opening.

4,552,574

AIR CLEANER

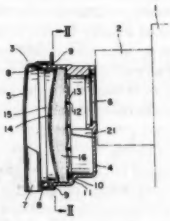
Nobuyuki Hotta, Niiza, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,414

Claims priority, application Japan, Apr. 18, 1983, 58-56678[U]

Int. Cl.[4] B01D *46/10*

U.S. Cl. 55—501 **5 Claims**



1. An air cleaner for mounting on a carburetor comprising:

a bowl-shaped casing having an exit duct for communicating said casing with a carburetor and a set of recess portions and a cover member having conduit means opening into said casing to bring air into said casing;

a filter element having first and second sides and located in said bowl-shaped casing in the path of air passing between

said conduit means and said exit duct for filtering air introduced from outside into said casing;

a holding means for holding said filter element in place, said holding means supporting the first side of said filter element;

a holding plate assembly in said casing having a grid-like portion adjacent the second side of said filter element and including a set of engaging lug portions cooperating with said set of engaging recess portions so as to engage said holding plate assembly to said casing,

one of each of said recess and lug sets of engaging portions located on one side of said holding plate assembly and said casing in adjacent engageable relationship to each other,

another of each of said recess and lug sets of engaging portions located on a side of said holding plate assembly and said casing, in adjacent engagable relationship to each other, opposite said one side of said holding plate assembly and said casing,

said one of each of said engaging portions on one side of said holding plate assembly and said casing displaced vertically from said another of each of said engaging portions on the opposite side of said holding plate assembly and said casing.

4,552,575

METHOD FOR THE MASS SEPARATION OF A LIQUID MIXTURE THROUGH FRACTIONAL CRYSTALLIZATION

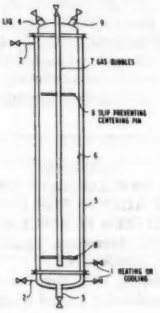
Konrad Stolzenberg, Waltrop; Karl H. Koch, and Rolf Marrett, both of Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Ruetgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 24, 1983, Ser. No. 460,429

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203818

Int. Cl.[4] B01D *9/02*

U.S. Cl. 62—544 **5 Claims**



1. A method for the mass separation of a liquid mixture through fractional crystallization comprising precipitating from a liquid phase, a crystal layer on the wall of a filled crytallization zone having at least one heat dissipating surface, wherein the liquid phase is cooled indirectly and the mass transfer occurs from thin boundary layers, and removal of the residual liquid phase and melting down of the crystal layer occur in one or more stages, wherein the thin boundary layers are produced by gas bubbles introduced at the bottom of the crystallization zone without recycling of the liquid phase, said gas bubbles gliding during their ascent as closely as possible along the heat-dissipating surface of said zone.

4,552,576

METHOD OF FABRICATING OPTICAL GLASS BASE MATERIAL AND APPARATUS FOR FABRICATING THE SAME

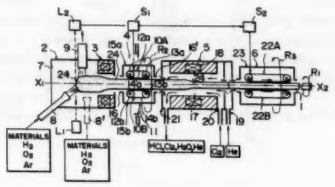
Ryoichi Hara; Toshiaki Kuroha, both of Ichihara, and Nobuo Inagaki, Ibaraki, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Nippon Telephone & Telegraph Public Corp., both of Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 641,880

Claims priority, application Japan, Aug. 22, 1983, 58-152760

Int. Cl.[4] C03C *25/02;* **C03B** *37/03*

U.S. Cl. 65—2 **7 Claims**



1. A method of fabricating an optical glass base material, comprising the steps of:

(a) generating in an input zone, soot-like oxide powders from SiO_2 or GeO_2 raw material from a burning zone (8) so as to produce fine glass powders and injecting these powders in a predetermined direction along a rotating longitudinal travel path;

(b) growing with these powders a rod-shaped base material workpiece (24) and detecting the formation of said workpiece by means of an emitted beam to produce a control signal;

(c) controlling the forward moving speed of the rod-shaped workpiece in response to the control signal;

(d) passing said rod-shaped workpiece through a first heat treating zone to semi-sinter said workpiece, and simultaneously degassing the workpiece of OH components while reducing its volume; and,

(e) introducing the semi-sintered workpiece to a second heat treating zone while supporting the workpiece so as to degas the workpiece and transparently vitrifying the workpiece while feeding an inert gas into this second heat treating zone.

4,552,577

METHOD OF PRODUCING SHAPED FOAMED-GLASS ARTICLES

Deepak Varshneya, Washington, D.C.; Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Robert K. Mohr, Washington, D.C., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Annapolis, both of, Md.

Filed Apr. 5, 1983, Ser. No. 482,231

Int. Cl.[4] C03B *19/08*

U.S. Cl. 65—22 **28 Claims**

1. A method of forming shaped foamed-glass articles comprising:

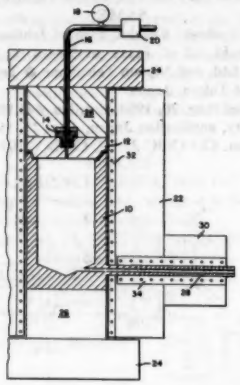
(i) introducing glass particles to a pressure vessel in the presence of water;

(ii) applying a pressure to said pressure vessel sufficient to permit entrapment of water during sintering;

(iii) increasing the temperature of said glass in said pressurized vessel to cause said glass to sinter and entrap water;

(iv) increasing the temperature of said glass to its fining temperature (T_F) of about 800° to 1200° C. in said pressurized vessel for a sufficient time to fine said glass;

(v) reducing the temperature of said glass to its pressure release temperature (T_{PR});



(iv) reducing the pressure on said glass containing water whereby controlled foaming of said glass occurs; and

(viii) cooling to form said shaped foamed-glass article.

4,552,578

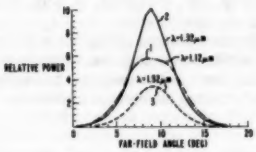
OPTICAL FIBER FABRICATION PROCESS COMPRISING DETERMINING MODE FIELD RADIUS AND CUT-OFF WAVELENGTH OF SINGLE MODE OPTICAL FIBERS

William T. Anderson, Lawrenceville, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 16, 1983, Ser. No. 494,891

Int. Cl.[4] C03B *37/07*

U.S. Cl. 65—29 **4 Claims**



1. Single mode optical fiber manufacturing process comprising a multiplicity of manufacturing steps including forming a first optical fiber preform, drawing first fiber from the first preform and grading of the draw fiber, the process further comprising

determining the mode field radius ω for radiation of wavelength λ_o of a segment of the first fiber, λ_o being a wavelength in the single mode regime of the segment of fiber, the fiber segment having a first and a second end and being of length effective to produce steady-state propagating conditions at the second end for radiation of wavelength λ_o launched into the first end;

comparing ω to a predetermined target value of the mode field radius; and

setting at least one of the manufacturing steps in the manufacture of the first fiber, setting of at least one of the manufacturing steps for the subsequent production of another optical fiber, in accordance with the result of the comparison between ω and the target value;

the mode field radius ω determined by a method comprising

(a) coupling substantially monochromatic measurement radiation of wavelength λ_o into the first end of the fiber segment in a manner effective for launching the fundamental mode LP_{01},

(b) measuring, as a function of a far-field angle θ, the radiation power at a multiplicity of values of θ in at least part of the central lobe of the far-field radiation field of the radiation emitted from the second end of said first fiber fiber end, the set of measured values of radiation power to be referred to as the radiation power distribution,

(c) fitting a Gaussian function $G(\theta)$ to the radiation power distribution, or to a distribution derived from the radiation power distribution, and

(d) determining ω from the fitted $G(\theta)$.

4,552,579

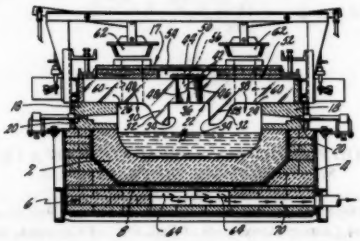
GLASS FOREHEARTH

John F. Blumenfeld, Simsbury, and Frank Bubon, Windsor, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Dec. 7, 1983, Ser. No. 559,160

Int. Cl.[4] C03B *5/235*

U.S. Cl. 65—346 **14 Claims**



1. A forehearth for the conveyance of molten glass having at least one cooling zone, said cooling zone including a trough, a roof over said trough, a pair of spaced projections extending downwardly from the roof to define in the space below the roof a central channel over the central portion of the stream of molten glass and side channels over respective side portions of the stream of glass, said roof having at least one area of reduced thickness in the portion over the central channel, an enclosed upper cooling channel extending longitudinally of the forehearth over the area of reduced thickness and having an inlet and an outlet spaced longitudinally from said inlet, and heating means for applying heat to each side portion of the stream of glass.

4,552,580

USE OF N-ACYL SARCOSINATE AND ITS SALTS AS COMPATIBILITY AGENTS FOR PESTICIDE/LIQUID FERTILIZER FORMULATIONS

Michael J. Aldwinckle, Stevenage, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,339

Claims priority, application United Kingdom, Mar. 11, 1982, 8207131

Int. Cl.[4] A01N *25/30*

U.S. Cl. 71—3 **14 Claims**

1. A combined liquid fertiliser/pesticide mixture comprising

(i) a liquid fertiliser;

(ii) a pesticide;

(iii) a compound of the formula

$$RCON(CH_3)CH_2COOX$$

wherein

R is C_8–C_{17} alkyl or alkenyl, and

X is hydrogen, and alkali metal, ammonium, C_1–C_4 alkylamine or triethanolamine; and

(iv) a solvent or mixture of solvents for (iii).

4,552,581

METHOD OF INHIBITING NITRIFICATION OF AMMONIUM NITROGEN

John M. Bremner, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 3, 1984, Ser. No. 606,893
Int. Cl.[4] C05G *3/08*
U.S. Cl. 71—61 6 Claims

1. The method of inhibiting nitrification of ammonium nitrogen in a plant growth medium containing a fertilizer providing ammonium nitrogen, comprising having present in said growth medium an effective nitrification inhibiting amount of phenylacetylene.

4,552,582

COTTON DEFOLIANT COMPOSITIONS

Paul J. Kruger, Middlesex, N.J., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.

Continuation-in-part of Ser. No. 412,144, Aug. 27, 1982, abandoned. This application Jul. 28, 1983, Ser. No. 517,424
Int. Cl.[4] A01N *43/82*
U.S. Cl. 71—73 10 Claims

1. A cotton defoliant composition consisting essentially of an effective cotton defoliating mixture of thidiazuron and a thiocyanate compound as a cotton defoliating potentiating agent, the weight ratio of thiocyanate compound to thidiazuron being from about 10:1 to about 640:1 and said thiocyanate compound is selected from the group consisting of ammonium thiocyanate, sodium thiocyanate and potassium thiocyanate.

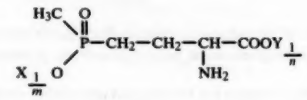
4,552,583

HERBICIDAL COMPOSITIONS

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Division of Ser. No. 68,185, Aug. 20, 1979, Pat. No. 4,382,812, which is a division of Ser. No. 971,636, Dec. 20, 1978, Pat. No. 4,265,654. This application Sep. 21, 1982, Ser. No. 420,929
Claims priority, application Japan, Dec. 28, 1977, 52-157421; Dec. 29, 1977, 52-157422; Dec. 29, 1977, 52-158932; Mar. 30, 1978, 53-36059
Int. Cl.[4] A01N *57/12*
U.S. Cl. 71—86 16 Claims

1. A herbicidal composition for controlling perennial weeds and brush which comprises a component (i) which is a compound of the formula



wherein X and Y are the same or different and each represents a hydrogen atom, a mono- or divalent metal atom, ammonium, a mono-, di- or tri-lower alkylammonium, a mono-, di- or tri-ethanolammonium or a mono-, di- or tri-lower alkenylammonium, and m and n represent valencies of X and Y, respectively

or an acid-addition salt thereof, and a component (ii) which comprises a compound selected from the group consisting of a chlorophenoxy C_1–C_4 aliphatic acid or salt or ester thereof, a chlorobenzoic acid or salt or ester thereof and 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea; in a ratio by weight of said component (i) to said component (ii) of from 1:0.25 to 1:1.

4,552,584

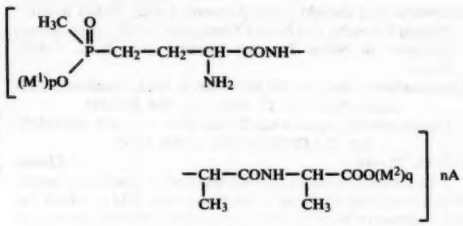
HERBICIDAL COMPOSITION AND HERBICIDAL PROCESSES

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 164,510, Jul. 2, 1980, abandoned, which is a division of Ser. No. 959,838, Nov. 13, 1978, Pat. No. 4,309,208. This application May 18, 1983, Ser. No. 495,819
Claims priority, application Japan, Mar. 9, 1978, 53-25971
Int. Cl.[4] A01N *51/18, 43/58*
U.S. Cl. 71—86 5 Claims

1. A process for severely damaging or killing unwanted herbaceous and bushy plants, which comprises applying to plants susceptible thereto or to the growth medium of said plants a herbicidally effective amount of a composition consisting essentially of:

(i) SF-1293 substance or an SF-1293 substance salt of the formula:



wherein M^1 and M^2 are each hydrogen or a cation selected from the group consisting of sodium, potassium, lithium, copper, magnesium, calcium, zinc, nickel, manganese and ammonium which is unsubstituted or substituted by 1–4 lower alkyl, hydroxy lower alkyl, or lower alkenyl; A is an inorganic or organic acid selected from the group consisting of hydrochloric, sulfuric, hydrobromic, phosphoric, perchloric, nitric, acetic, propionic, citric, tartaric, monochloroacetic, trichloroacetic and trifluoroacetic acids; n is 0, 0.5 or 1; p is the inverse number of the valency of M^1; and q is the inverse number of the valency of M^2, in admixture with

(ii) the choline salt of maleic hydrazide, at a weight ratio of component (i) to component (ii) in the range of 1:0.5 to 1:16, to inhibit the growth of said unwanted plants.

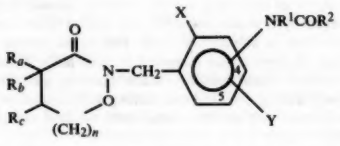
4,552,585

HERBICIDAL 2-(AMINOPHENYL)METHYL DERIVATIVES OF 3-ISOXAZOLIDINONES OR 3-OXAZINONES

Jun H. Chang, Princeton Junction, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Oct. 4, 1984, Ser. No. 657,848
Int. Cl.[4] A01N *43/72, 43/74;* C07D *261/04, 265/02*
U.S. Cl. 71—88 10 Claims

1. A compound of the formula



in which n is zero or one; NR^1COR^2 is in one of positions 4 and 5;

R_a is hydrogen or alkyl of 1 to 3 carbon atoms;
R_b is hydrogen, alkyl of 1 to 3 carbon atoms, or methylthio;
R_c is hydrogen, alkyl of 1 to 3 carbon atoms, or phenyl; or R_a, R_b and R_c taken with the carbon atoms at positions 4' and 5' form a benzene ring;
X is hydrogen or halogen;
Y is hydrogen or halogen at the other of positions 4 and 5;
R^1 is hydrogen, or alkyl of 1 to 4 carbon atoms;
R^2 is alkyl of 1 to 6 carbon atoms, haloalkyl of 2 to 4 carbon atoms, cyclopropyl, methylcyclopropyl, benzyl, alkoxy of 1 to 2 carbon atoms, t-butyloxy when R^1 or Y is other than hydrogen, haloalkoxy of 3 or 4 carbon atoms, or $-NR^3R^4$;
R^3 is methyl; and
R^4 is hydrogen, methyl, methoxy or benzyl.

5. A herbicidal composition comprising a herbicidally effective amount of the compound of claim 1 in admixture with an agriculturally acceptable carrier, diluent, or adjuvant.

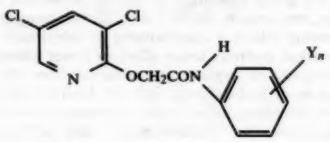
4,552,586

CERTAIN 2-PYRIDYLOXYACETANILIDES AND THEIR USE AS HERBICIDES

Masahiro Aya; Junichi Saito; Kazuomi Yasui; Shinzo Kagabu; Atsumi Kamochi, and Naoko Yamaguchi, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Continuation of Ser. No. 353,987, Mar. 2, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 553,001
Claims priority, application Japan, Mar. 12, 1981, 56-34555
Int. Cl.[4] C07D *213/64;* A01N *43/40*
U.S. Cl. 71—94 **3 Claims**

1. In the cultivation of rice the method of combating weeds which comprises applying to the rice or to a field in which the rice is grown or to be grown a herbicidally effective amount of a 2-pyridyloxyacetanilide of the formula



in which
Y each independently is C_1–C_4-alkyl or CF_3, and
n is 0, 1, 2 or 3.

4,552,587

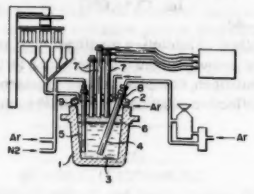
METHOD OF OPERATING LADLE REFINING FURNACE

Hirohisa Nakashima; Yoshimi Komatsu; Masafumi Ikeda, and Tsuneo Kondo, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,567
Claims priority, application Japan, Sep. 28, 1984, 59-145888[U]; Oct. 11, 1984, 59-213093; Oct. 12, 1984, 59-153759[U]; Oct. 12, 1984, 59-153760[U]; Oct. 12, 1984, 59-213332
Int. Cl.[4] C21C *5/52*
U.S. Cl. 75—12 **10 Claims**

1. A method of operating a ladle refining furnace having a ladle covered by a water-cooled cover and at least one bubbling lance that is submerged into, and subsequently withdrawn from, molten metal disposed in said ladle during the refining thereof, each bubbling lance flowing gas into said molten metal during refining and during submersion into and withdrawal from said molten metal, said method comprising the steps of:

(a) adjusting the flow of said gas from said bubbling lance during said submersion and said withdrawal of said lance at a flow rate which is greater than the flow rate of said gas from said bubbling lance during stationary bubbling of the molten metal when said bubbling lance is stationary, and decreasing the flow rate of said gas from said bubbling lance when it is stationary after said submersion in said molten metal; and



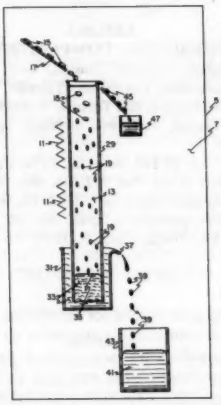
(b) adjusting said flow rate of said gas so that the rate of change in flow rate of said gas is not more than 200 l/min/min when the flow rate of said gas flowing through said bubbling lance is decreased after submersion of said bubbling lance into said molten metal.

4,552,588

MAGNESIUM REDUCTION OF URANIUM FLUORIDE IN MOLTEN SALTS

Guy R. B. Elliott, 133 La Senda Rd, Los Alamos, N. Mex. 87544

Filed Jun. 9, 1983, Ser. No. 502,714
Int. Cl.[4] C22B *60/02*
U.S. Cl. 75—84.4 **10 Claims**



1. A method of reducing uranium fluoride to uranium by reaction with magnesium at near-atmospheric pressure comprising:

(a) providing a means for heating and containing molten salt,
(b) providing a substantially inert atmosphere within the said means for heating and containing molten salt,
(c) emplacing molten salt in the said means for heating and containing molten salt, thereby creating a molten-salt region,
(d) introducing uranium fluoride and magnesium into the said molten-salt region,
(e) allowing the said reaction of uranium fluoride with magnesium to take place,
(f) allowing the said uranium produced by the said reaction of uranium fluoride with magnesium to settle from the said molten salt, and
(g) independently removing the said uranium and the mag-

nesium-fluoride byproduct of the said reaction of uranium fluoride with magnesium.

10. An apparatus for reacting uranium fluoride with magnesium to produce uranium comprising:

(a) a first containment means with at least one first entry means and, at lower elevation, at least one first discharge means,

(b) molten uranium filling the said first containment means to the discharge elevation of the said first discharge means,

(c) a second containment means with at least one second entry means and, at lower elevation, at least one second discharge means, the said second discharge means being positioned within the said molten uranium and at an elevation lower than the elevation of the said first discharge means, and the said second entry means being positioned at a higher elevation than the said molten uranium,

(d) molten salt bath at least partially filling the said second containment means and floating upon the said molten uranium,

(e) a means for introducing at least uranium fluoride and magnesium through the said second entry means and into the said molten salt,

(f) a means for collecting molten uranium which has formed in the said molten salt, has moved from the said molten salt, and has passed into the said molten uranium, thereby passing through the said second discharge means and through the said first entry means,

(g) a means for discharging at least magnesium fluoride separate from the said first discharge means, and

(h) a means for providing an inert atmosphere in regions where the reactants, uranium fluoride and magnesium, and the uranium product of the reaction could be attacked by a reactive atmosphere.

4,552,589

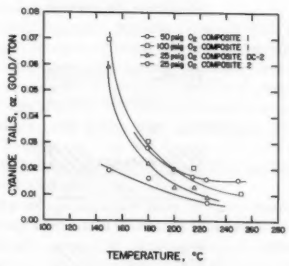
PROCESS FOR THE RECOVERY OF GOLD FROM REFRACTORY ORES BY PRESSURE OXIDATION

Peter G. Mason, Scarborough, Canada; Frank D. Wicks, Stansbury Park, Calif., and John C. Gathje, Arvada, Colo., assignors to Getty Oil Company, Salt Lake City, Utah

Filed Jan. 27, 1984, Ser. No. 574,667

Int. Cl.[4] C22B *11/08*

U.S. Cl. 75—105 **27 Claims**


CYANIDE TAILS, oz GOLD/TON
TEMPERATURE, °C
50 psig O2 COMPOSITE 1
100 psig O2 COMPOSITE 1
25 psig O2 COMPOSITE DC-2
25 psig O2 COMPOSITE 2

21. A process for recovering gold, said process comprising the steps of:

forming an ore slurry by grinding a refractory gold bearing ore to form a slurry which is mixed with a diluent stream;

introducing the slurry to at least one autoclave which is maintained at an autoclave temperature in excess of about 150° C. and an autoclave oxygen partial pressure maintained in excess of about 10 psia;

agitating the slurry to oxidize substances which cause the ore to be refractory to form an oxidized slurry;

cooling the oxidized slurry to a temperature less than about 150° C.;

passing the oxidized slurry to a plurality of stages in which the oxidized slurry is contacted with a cyanide and activated charcoal, the activated charcoal flowing in countercurrent fashion with the oxidized slurry whereby gold is transferred to the activated charcoal;

separating the activated charcoal from the oxidized slurry;

collecting a tailings stream from the oxidized slurry;

treating a water portion of the tailings stream to destroy any free cyanide and form a treated reclaimed water stream; and

recycling the treated reclaimed water stream to a step of the process upstream from the step of passing the oxidized slurry to a plurality of stages.

4,552,590

FERRO-SINTERED ALLOYS

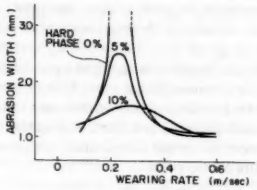
Tohru Nakata, Matsudo; Hiroyuki Endo, Abiko; Masatoshi Harada; Tadao Hayasaka, both of Kashiwa, and Osamu Miyamoto, Matsudo, all of Japan, assignors to Hitachi Powdered Metals Co. Ltd., Japan

Division of Ser. No. 237,906, Feb. 25, 1981, Pat. No. 4,422,875. This application Aug. 12, 1983, Ser. No. 522,663

Claims priority, application Japan, Apr. 25, 1980, 55-54316; May 9, 1980, 55-60609

Int. Cl.[4] B22F *5/00*; C22C *38/00*

U.S. Cl. 75—246 **2 Claims**



1. A ferro-sintered alloy having wear resistance at elevated temperatures, comprising a matrix in which 25 to 75 weight % of an alloying base A of the following composition is irregularly dispersed with 75 to 25 weight % of an alloying base B of the following composition, said matrix having 3 to 15 weight % of at least one of the following hard phases C and D dispersed therein:

Base A			Base B		
Cr	2~4%	(by weight)	Co	5.5~7.5%	(by weight)
Mo	0.2~0.4%	(by weight)	Ni	0.5~3%	(by weight)
V	0.2~0.4%	(by weight)	Mo	0.5~3%	(by weight)
C	0.6~1.2%	(by weight)	C	0.6~1.2%	(by weight)
Fe	the remainder		Fe	the remainder	

Hard phase C:

45~60% Co—33~36% Mo—and remainder Si Alloy (by weight)

Hard phase D:

45~60% Fe—33~36% Mo—and remainder Si alloy (by weight)

4,552,591

OIL FIELD BIOCIDE COMPOSITION

Scott W. Millar, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 15, 1984, Ser. No. 610,452

Int. Cl.[4] C09D *5/14*

U.S. Cl. 106—18.33 **5 Claims**

1. A method of inhibiting bacterial growth in oil field fluids comprising adding thereto an effective bacterial inhibiting amount of a biocide consisting essentially of a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one, the weight ratio of the former to the latter being from about 94 percent to about 64 percent, adsorbed on a solid, particulate adsorbent.

4,552,592

PROCESS FOR PREPARING PRINTING INK BINDERS, AND THEIR USE IN PRINTING INKS

Albert Rudolphy, Wiesbaden, and Gerhard Werner, Glashütten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 377,910, May 13, 1982, abandoned.
This application Mar. 29, 1984, Ser. No. 594,700
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127719
The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.
Int. Cl.[4] C09D *11/08*
U.S. Cl. 106—30 9 Claims

1. A process for preparing printing ink binders consisting essentially of of (a) a natural resin acid, (b) a hydrocarbon polymer which is derived from polymerizable hydrocarbons having isolated C_5 rings, (c) a α,β-ethylenically unsaturated carboxylic acid unit, and (d), a metal compound selected from the groups consisting of at least one calcium compound and a combination thereof with a compound of at least one other metal of group II of the periodic system, which comprises reacting in a first step (A) component (a) with a component (b) having a bromine number of 80 to 200 and a component (c), the natural resin (a) and the sum of components (b) and (c) being in a weight ratio of 1:0.7 to 1, B) reacting the product obtained in a second step in in the melt with component (d) such that the meta content, relative to the total amount of components (a) to (c) is in the range of from 1.5 to 6% by weight and in such a way that the acid number is reduced by at least one third of its value with the provisio that at most 70% of the COOH-groups of the reaction product are converted into salts and (C) reacting the product obtained in a third step in the melt with acetic acid to convert the metal compounds not consumed, via acetates into salts of the resin.

4,552,593

PREPARATION OF EFFECT PIGMENTS COATED WITH METAL OXIDES

Werner Ostertag, Gruenstadt, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,274
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237264
Int. Cl.[4] C04B *31/26, 31/00;* C08K *7/00*
U.S. Cl. 106—291 18 Claims

9. A process for the preparation of an effect pigment wherein (i) as the pigment substrate, mica flakes, of which from 10 to 90% by weight have a longest particle dimension of from 60 to 400 μm and the remainder have a longest dimension of from 3 to 30 μm, are fluidized in a fluidized bed, (ii) the fluidized particles are simultaneously treated at from 200° to 500° with one or more metal chlorides and steam in the gas phase, where the particles are coated by hydrolysis of the metal chlorides and (iii) after coating, that fraction which has a longest particle dimension of from 3 to 30 μm is separated off as the effect pigment.

4,552,594

METHOD FOR REMOVING PIPE COATINGS

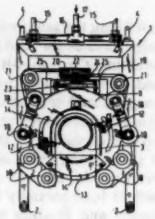
Dirk F. van Voskuilen, and Frans van Voskuilen, both of No. 12, Stationsweg, 3931 ES Woudenberg, Netherlands

Filed Sep. 6, 1983, Ser. No. 529,752
Claims priority, application Netherlands, Sep. 8, 1982, 8203501
Int. Cl.[4] B08B *3/02, 9/02*
U.S. Cl. 134—34 4 Claims

1. A method of removing bituminous or other coatings from an outer pipe surface having a circumferential and longtudinal direction comprising the following steps:

directing one or more powerful water jets against said outer pipe surface with a pressure of between 300 and 600 bars;

directing said water jets against said outer pipe surface at an acute impact angle relative to said circumferential direction of the pipe; and



moving each of said water jets in a zigzag path along said outer pipe surface;

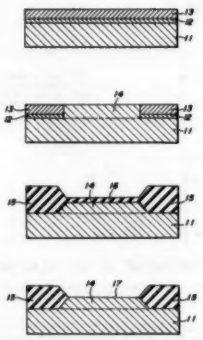
said zigzag path having the longitudinal direction of the pipe as its main direction, with paths of adjacent water jets being closely spaced in said circumferential direction.

4,552,595

METHOD OF MANUFACTURING A SEMICONDUCTOR SUBSTRATE HAVING DIELECTRIC REGIONS

Hiroshi Hoga, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,094
Claims priority, application Japan, May 13, 1983, 58-82502
Int. Cl.[4] H07L *21/263, 21/225*
U.S. Cl. 148—1.5 9 Claims



1. A method of manufacturing a semiconductor substrate having dielectric isolation regions comprising steps of forming an amorphous silicon layer on the surface of a monocrystalline silicon substrate by implanting ions in the surface of said monocrystalline substrate to produce a first layer of amorphous silicon on said substrate, chemically vapor depositing a second amorphous layer of silicon onto said first layer, annealing a selected zone of said amorphous silicon layers to form a crystallized region intended as an active region, subjecting the resulting structure to a thermal oxidation process to form said dielectric isolation regions, and removing an oxide coating formed on the surface of said crystallized region.

4,552,596

GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET WITH IMPROVED WATT LOSS

Tadashi Ichiyama, Sagamihara; Shigehiro Yamaguchi, Fujisawa; Tohru Iuchi, Kawasaki, and Katsuro Kuroki, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

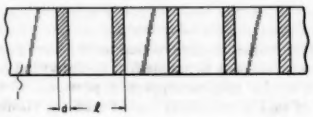
Continuation of Ser. No. 214,035, Dec. 8, 1980, abandoned, which is a division of Ser. No. 58,757, Jul. 19, 1979, Pat. No. 4,293,350. This application Aug. 17, 1982, Ser. No. 408,737

Claims priority, application Japan, Jul. 26, 1980, 55-91217

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.⁴ C22C *38/02*

U.S. Cl. 148—31.5 **26 Claims**



1. A grain-oriented silicon steel electrical sheet with a reduced watt loss wherein said sheet has been cold rolled to a final thickness and finally high temperature annealed, said steel sheet having:

a (110) [001] structure and coarse grains;

a plurality of spaced apart lines of laser beam irradiation extending across said sheet and thereby extending across said coarse grains with said lines of laser beam irradiation being produced by irradiating said sheet with a laser beam after final high temperature annealing;

wherein

said lines of laser beam irradiation are oriented across the rolling direction of said sheet; and

the surface of said sheet is not damaged by said laser beam irradiation and does not have raised edges adjacent said lines of laser beam irradiation caused by said irradiation with said laser beam; and

with said sheet further having:

subdivided magnetic domains between each of two lines of laser beam irradiation wherein said subdivided magnetic domains are formed by said laser beam irradiation.

14. A grain-orientd silicon steel electrical sheet with a reduced watt loss wherein said steel sheet has been cold rolled to a final thickness and finally high temperature annealed, said steel sheet having:

a (110) [001] structure and coarse grains; insulating film on the surface of said sheet;

a plurality of spaced-apart lines of laser beam irradiation extending across said insulating film and across said sheet and thereby extending across said coarse grains with said lines of laser beam irradiation being produced by irradiating said sheet having said insulating film on the surface thereof with a laser beam after final high temperature annealing and after application of insulating film on the surface of said sheet; wherein

said lines of laser beam irradiation are oriented across the rolling direction of said sheet; and

said surface of said silicon steel sheet is not damaged by said laser beam irradiation and said silicon steel sheet does not have raised edges adjacent said lines of laser beam irradiation caused by said irradiation with said laser beam; and

with said sheet further having:

subdivided magnetic domains between each of two lines of laser beam irradiation wherein said subdivided magnetic domains are formed by said laser beam irradiation.

4,552,597

SOFT COMPOSITE EXPLOSIVES AND PROCESS FOR MAKING SAME

M. Taylor Abegg, Salt Lake City; John A. Peterson, Brigham City, both of Utah; Harvey A. Jessop, deceased, late of Lehi, Utah, and by Ormond F. Lavery, personal representative, Sandy, Utah, assignors to Megabar Explosives Corporation, Ogden, Utah

Filed Aug. 17, 1984, Ser. No. 641,687

Int. Cl.⁴ C06B *45/00*

U.S. Cl. 149—2 **27 Claims**

1. An essentially anhydrous soft composite explosive composition comprising a melt-in-fuel emulsion in which the discontinuous phase is a eutectic mixture comprised of ammonium nitrate and at least one soluble compound with at least one other oxidizer salt, and in which the continuous phase is a mixture of at least one emulsifier and at least one fuel, comprising less than 2.5% by weight of the explosive composition.

4,552,598

ETHYLENEDIAMINE SALT OF 5-NITROTETRAZOLE AND PREPARATION

Kien-yin Lee, and Michael D. Coburn, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 17, 1984, Ser. No. 611,557

Int. Cl.⁴ C06B *31/32*

U.S. Cl. 149—47 **38 Claims**

1. A process for preparing the ethylenediamine salt of 5-nitrotetrazole, which comprises the steps of:

a. dissolving two equivalents of ammonium 5-nitrotetrazole in methanol forming thereby a first solution;

b. adding one equivalent of ethylenediamine to said first solution, forming thereby a second solution;

c. allowing sufficient interaction time to permit said ammonium 5-nitrotetrazole and said ethylenediamine in said second solution to react to substantial completion; and

d. removing said methanol.

4,552,599

PROCESS FOR PRODUCING INSULATED RECTANGULAR WIRE

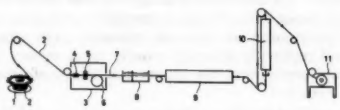
Shigeo Masuda, and Morihiko Katsuda, both of Aichi, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed May 8, 1984, Ser. No. 608,287

Claims priority, application Japan, May 11, 1983, 58-82206

Int. Cl.⁴ H01B *13/06*

U.S. Cl. 156—50 **3 Claims**



1. A process for producing insulated rectangular wire, comprising the steps of:

drawing a round wire through a die in a tandem-drawing device;

electrolytically cleaning the drawn wire;

applying an insulating coating onto the cleaned surface;

baking the insulating coating;

subjecting the insulated wire to at least one cycle of rolling; and

wherein said step of drawing said round wire comprises drawing down said round wire by means of a single die and a capstan to thereby remove any surface defects in said conductor having a size of 3 μm or greater, said capstan being made of a material softer than said conductor.

4,552,600

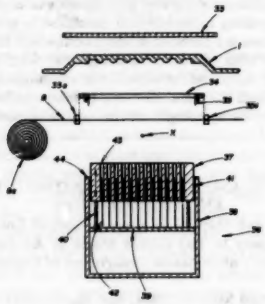
METHOD AND APPARATUS FOR MANUFACTURING A PURGE TRAP TRAY

Stanislaus J. Laiewski, Reading; Thomas A. Hessen, Ephrata; Thomas R. Hardy, Lebannon, and Allie F. Gilvin, Sinking Spring, all of Pa., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Nov. 23, 1982, Ser. No. 443,992

Int. Cl.⁴ B29C *27/06, 27/08;* **B32B** *31/04*

U.S. Cl. 156—73.1 **16 Claims**



1. A method for manufacturing a tray having a purge liquid reservoir comprising:

providing a support portion comprising a shoulder area and standoff means raised from a sunken reservoir area wherein said shoulder area completely surrounds said reservoir area;

removing a sheet of liquid impermeable thermoplastic material from a larger sheet of said material, said removed sheet having a border area; and

simultaneously perforating said removed sheet while adhering said border area to said shoulder area in a liquid tight manner.

11. An apparatus for forming a tray having a purge liquid reservoir comprising:

means adapted to separate a portion of a sheet of thermoplastic material;

resiliently mounted transfer block means comprising perforation pin channels and vacuum ports, said block means being adapted to transfer said separated portion to a position where a border area of said separated portion is in substantial contact with a shoulder area of a tray support portion;

perforation pin means comprising tips, said perforation pin means being mounted on a crossplate and inserted into said perforation pin channels, whereby, upon depression of said resiliently mounted transfer block means, the tips of said perforation pin means exit said perforation pin channels; and

means adapted to adhere aaid border area to said shoulder area.

4,552,601

METHOD OF FOAMING A FOAMABLE COMPOSITION IN A SEALED SACK

Yutaka Hirano, and Hiroki Kawai, both of Tokyo, Japan, assignors to Sumitomo Corporation and Nikken Sekkei Ltd., both of Osaka, Japan

Filed Mar. 24, 1983, Ser. No. 478,700

Claims priority, application Japan, Mar. 24, 1982, 57-46883; Mar. 24, 1982, 57-46884

Int. Cl.⁴ C09J *5/02;* **B32B** *5/20, 31/14*

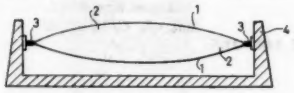
U.S. Cl. 156—79 **6 Claims**

1. A method of manufacturing a construction material comprising the steps of:

forming a hermetically sealed sack by disposing two thin flat sheets of flexible material in overlying relationship to one another and sealing together the edges of said thin sheets about the peripheries thereof;

providing a foamable composition in said sealed sack;

fixedly supporting said sack horizontally in suspension by said edges and completely about said peripheries thereof for the portions of said sheets between said sealed edges to be unsupported and freely deformable and the said sealed edges to be fixedly secured and immovably retained in place in their supported contour position; and



causing said foamable composition to be foamed and solidified while said sack is maintained so supported in suspension, whereby said unsupported portions of said thin sheets of said hermetically sealed sack are elastically deformed, without any external restraint thereof, arcuately outwardly relative to one another transverse to the plane of said supported sealed edges and into shallow spherically dished from by the pressure produced by the foaming of said foamable composition while the said sealed edges are maintained flat and in their said contour position in the said plane by the said fixedly supporting thereof.

4,552,602

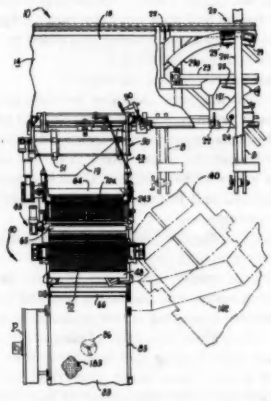
HIGH—SPEED SPLICING SYSTEM FOR PREPARING PLY STOCK

Clifford A. Landsness, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 4, 1984, Ser. No. 616,863

Int. Cl.⁴ B65H *69/06*

U.S. Cl. 156—157 **8 Claims**



1. In a process for preparing ply stock in which a continuous sheet of rubber-covered tire cord fabric having evenly spaced longitudinal cords is fed by first conveyor means to an angularly adjustable bias cutter and periodically cut across its width to form panels of a predetermined size and parallogram shape which are transferred from said first conveyor means to a second conveyor means and automatically spliced together at their uncut side portions by a splicer to form a continuous strip of ply stock which is fed by said second conveyor means in a direction parallel to the cut edges of the panels, the improvement which comprises,

(a) advancing each bias-cut panel from the cutter to a stationary transfer position on said first conveyor means in alignment with said continuous strip, wherein the side portion of the panel is adjacent the trailing side portion of a similar panel held in a stationary splicing position at the end of said strip during such advance,

(b) splicing said side portions and initiating operation of the cutter while the two panels are in said stationary positions,

(c) during operation of the cutter, completing the cycle by advancing said continuous strip a short distance in a direction transverse to the longitudinal tire cords to remove the spliced panel from said first conveyor means and to transfer the panel to said stationary splicing position; and

(d) continually repeating the cycle.

7. In an apparatus for preparing carcass ply stock having first conveyor means for supporting and feeding a continuous sheet of rubber-covered tire cord fabric of uniform width having regularly spaced longitudinal cords, an angularly adjustable bias cutter having means for making parallel cuts in the sheet to sever all of the cords while separating the sheet into panels of a predetermined size and a parallelogram shape, second conveyor means for receiving the cut panels including a lap splicer with means for joining the uncut side portions of said panels to form a continuous strip of ply stock on said second conveyor means, the improvement wherein:

(a) said lap splicer is located at the side of said first conveyor means to join the uncut side of the cut panel on said first conveyor means to the continuous ply stock formed by spliced panels on said second conveyor means, whereby each spliced panel is pulled transversely off the first conveyor means by periodic advancement of said ply stock,

(b) means are provided for positioning the last spliced panel with its trailing side edge portion overlapping the side edge portion of a previously cut panel resting in a transfer position on said first conveyor means,

(c) a pressure bar is mounted on the splicer to move downwardly against said overlapped side edge portions to provide a lap splice,

(d) actuating means are provided to move the pressure bar upwardly and downwardly in timed relation to operation of the cutter, and

(e) bar means are provided for engaging said trailing side edge portion to lift the same during a portion of each cycle to a position out the path of movement of said previously cut panel.

4,552,603

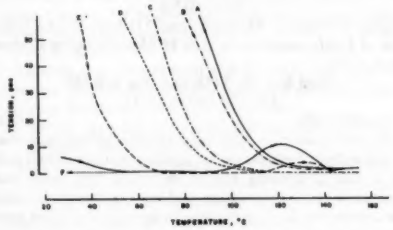
METHOD FOR MAKING BICOMPONENT FIBERS

Robert D. Harris, Jr.; James P. Parker, and Charles L. King, all of Asheville, N.C., assignors to Akzona Incorporated, Enka, N.C.

Division of Ser. No. 279,125, Jun. 30, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 423,943

Int. Cl.[4] D01D *5/22*

U.S. Cl. 156—167 **7 Claims**



1. A method for producing a heterofilament of the type comprising a latently adhesive component for forming interfilamentary bonds upon the application of heat and subsequent cooling, and a fiber component consisting of polyester, said heterfilament being characterized by a thermomechanical response wherein, upon the application of heat sufficient to melt the latently adhesive component and subsequent cooling, shrinkage force greater than about 0.01 g/denier appears in said fiber component only after the resolidification of said latently adhesive component; said method comprising the sequential steps of:

(a) spinning said fiber; and

(b) subjecting said fiber to a thermal conditioning treatment wherein said fiber is heated to a preselected temperature below the softening point of the lower melting component for at least a preselected time in order to bring about in said fiber the above described thermo-mechanical response.

4,552,604

BONDING METHOD EMPLOYING FILM ADHESIVES

George E. Green, Stapleford, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 871,052, Jan. 20, 1978, abandoned. This application May 27, 1980, Ser. No. 153,390

Claims priority, application United Kingdom, Feb. 2, 1977, 04170/77

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

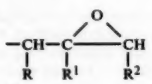
Int. Cl.[4] B29C *19/00*

U.S. Cl. 156—246 **9 Claims**

1. A method for bonding together two surfaces selected from the group consisting of metals, ceramics, and wood, which comprises

(i) applying to a carrier or strippable backing sheet, in the absence of a substance which gives rise to a substantial degree of photoinduced polymerisation through consumption of epoxide groups, a layer of (liquid) composition (consisting of)

an epoxide resin containing at least one group of the formula



directly attached to an atom of oxygen, nitrogen or sulfur, where either R and R^2 each represent a hydrogen atom in which case R^1 denotes a hydrogen atom or a methyl group, or R and R^2 together represent $—CH_2CH_2—$, in which case R^1 denotes a hydrogen atom,

a photopolymerisable compound which is an acrylic ester containing at least one group of the formula

$$CH_2=C(R^3)COO—$$

where R^3 is a hydrogen, chlorine or bromine atom, or a C_1–C_4 alkyl group,

and a heat-activated curing agent for epoxide resins selected from the group consisting of polycarboxylic acid anhydride, dicyandiamide, an imidazole, a latent boron difluoride chelate, an aromatic polyamine and a complex of an amine with boron trifluoride or with boron trichloride,

(ii) exposing said layer to actinic radiation until the composition solidifies to form an essentially solid, continuous, self-supporting adhesive film due to photopolymerisation of the said photopolymerisable compound while the epoxide resin remains substantially in the thermosettable state,

(iii) removing the said solid film from the carrier or strippable backing sheet,

(iv) sandwiching the said solid film between, and in contact with, the two surfaces, the said solid film, and

(v) heating the assembly to cure the epoxide resin.

4,552,605
UTILIZING PARTICULATE ADHESIVE FOR LAMINATING PLASTIC FILM TO THE SURFACE OF METAL

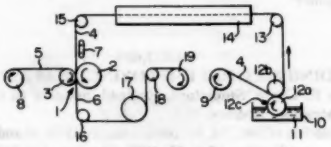
Senji Itoh, Ayase; Toshifumi Tanabashi, Yokohama, and Kazuhisa Ishibashi, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Continuation of Ser. No. 57,671, Jul. 16, 1979, abandoned. This application Aug. 12, 1981, Ser. No. 292,186

Claims priority, application Japan, Jul. 17, 1978, 53-86044; May 7, 1979, 54-54707

Int. Cl.[4] B32B *31/06, 31/08, 31/12, 31/28*

U.S. Cl. 156—273.3 **6 Claims**



1. In a method for producing laminated packaging sheet materials which comprises continuously feeding a metal foil to a fixed traveling path, causing said foil to travel along said path, continuously applying an adhesive to one surface of the traveling foil at a definite point along said path, continuously feeding a synthetic resin film to the surface of the adhesive-coated foil at a point downstream from said point at which said adhesive is applied to said foil, and adhering said film to said foil via said adhesive, the improvement which comprises

coating an adhesive synthetic resin powder having a particle diameter of 0.1 to 100 microns, either as such or as a dispersion in water or in an organic liquid having a boiling point of 50° to 112° C., on the surface of a metal foil having a thickness of 5–30 microns, the amount of said resin powder adhered to said foil surface being 0.1 to 10 g/m^2,

heating the resin coating by high frequency induction with a high frequency induction heating coil arranged adjacent said path opposite the traveling foil but not being in contact with said foil, to melt said resin powder, thereby to bond said resin powder to said foil,

superposing said synthetic resin film on the resulting molten coating,

heating the resultant assembly under pressure, and

cooling the heated assembly.

4,552,606
FLOTATION METHOD FOR ORIENTING CHIPS IN THE MANUFACTURE OF SURFACE COVERING

Timothy D. Colyer, Columbia, and Darryl L. Sensenig, Mountville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 7, 1983, Ser. No. 473,016

Int. Cl.[4] B32B *5/16*

U.S. Cl. 156—280 **2 Claims**

1. A method for forming a surface covering having a tightly packed single layer of decorative chips on the surface thereof, comprising:

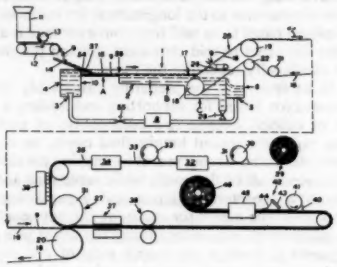
(a) providing a body of liquid of lesser density than that of the decorative chips and flowing from a first location to a second location;

(b) providing a plurality of decorative chips having a size-to-mass ratio such that they are capable of floating on the surface of said body of liquid;

(c) feeding said chips onto the surface of said liquid at said first location at a rate and in amounts predetermined to result in a spaced-apart dispersion of the chips thereon;

(d) reducing the rate of flow of said liquid at said second location, thereby causing said chips to form a tightly-packed single-chip-thickness layer on the surface of the liquid;

(e) removing said tightly packed layer of chips from said liquid at said second location without causing any substantial change in the spacing of the chips with respect to each other, said tightly packed layer of chips is removed from the liquid at said second location by passing a porous support member upward at an angle from below the surface thereof through the chip-layer-innerface, wherein excess water is removed from the support member and from around the chips prior to their securement to the substrate;



(f) applying and securing said layer of chips to a substrate;

(g) applying a transparent resinous wear layer to cover said chips and extend into any spaces therebetween; and

(h) applying heat to fuse all resinous material.

4,552,607
METHOD OF MAKING ELECTRICALLY CONDUCTIVE THIN EPOXY BOND

Gregg W. Frey, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Jun. 4, 1984, Ser. No. 616,630

Int. Cl.[4] C09J *3/02*

U.S. Cl. 156—330 **3 Claims**

1. A method of providing a thin, electrically conductive bond between two conductive substrates comprising the step of bonding the substrates together using a non-conductive epoxy to which uniformly sized, electrically conductive microspheres have been added, whereby the bond thus formed will be made by the non-conductive epoxy, the bond thickness will corrrespond to the diameter of said microspheres, and electrical conductivity between said substrates will be provided by the conductive path formed by said microspheres.

4,552,608
SYSTEM FOR COMPUTER CONTROLLED LABELING MACHINE

Wolfgang Hoffmann, Modesto, and Michael West, Turlock, both of Calif., assignors to B & H Manufacturing Company, Ceres, Calif.

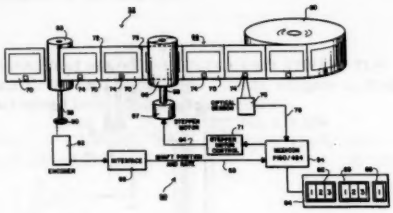
Filed Sep. 16, 1983, Ser. No. 532,783

Int. Cl.[4] B65H *23/18*

U.S. Cl. 156—351 **2 Claims**

1. In combination, a labelling machine including a master shaft and a slave shaft, means for sensing position of said master shaft, a data processing system including first input means connected to receive data from said sensing means, processing means connected to receive data from said first input means, and output means connected to receive results of operations performed by said processing means on the data, said output means being connected to supply control signals for operation of said slave shaft relative to said master shaft, an optical sensor for a registration mark for each label on a sheet of labels, said data processing system including a second input means, said

optical sensor being connected to said second input means, a means for entering a length of labels on the sheet to be fed through said labelling machine, said data processing system including a third input means, said length entering means being connected to said third input means, said slave shaft comprising a drive roller positioned to advance the sheet of labels in said labelling machine, a stepping motor connected between said slave shaft drive roller and said output means of said



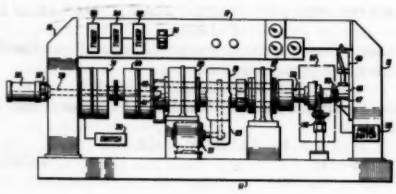
digital data processing means, said processing means being responsive to inputs from said master shaft position sensing means, said registration mark optical sensor and said length entering means for providing actuating signals from the master shaft position, sensed registration mark and length inputs to said stepping motor to maintain alignment of each label in the sheet of labels relative to position of the master shaft as the sheet of labels is advanced in said labelling machine.

4,552,609

METHOD AND APPARATUS FOR FRICTION WELDING

Howard M. Larsen, Daytona Beach, Fla., assignor to Homac Mfg. Company, Ormond Beach, Fla.

Filed Sep. 24, 1984, Ser. No. 653,791
Int. Cl.[4] B23K *27/08*
U.S. Cl. 156—358 **7 Claims**



1. A continuous drive friction welder including apparatus for orienting a rotatable element relative to a fixed element during the welding process comprising

mounting means for supporting said fixed element;

support means for holding said rotatable element; said support means comprising;

a drive hub;

a driven hub coaxial with and driven by said drive hub;

an escapement hub coaxial with and extending between said driven hub and said drive hub;

a linkage between said driven hub and said drive hub so as to drive said driven hub; and

a cam on said escapement hub for forcing said linkage into said escapement hub whereby said drive wheel ceases to impart motion to said driven wheel;

means for rotating said support means;

means for axially advancing said support means so that said rotatable element contacts said fixed element under a predetermined pressure;

means for disengaging said rotatable element support means from said rotating means after a predetermined number of rotations so that said rotatable element and associated support means continue to rotate into a coast down welding stage;

means for stopping said rotatable element after a predetermined period of time subsequent to said predetermined number of rotations; and

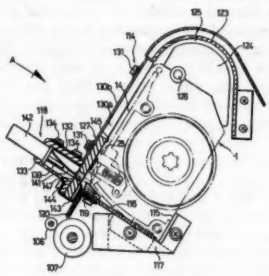
means for actuating said axial advancing means at the end of said predetermined period of time so as to apply a final forge pressure for completing the welding process whereby the rotational position of said rotatable element is oriented relative to said fixed element when weldment is completed.

4,552,610

AUTOMATIC LABEL WINDING AND CHARGING DEVICE FOR PRINTERS

Yo Sato, Tokyo; Tadao Kashiwaba, and Akeshi Odajima, both of Iwate, all of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed May 3, 1984, Ser. No. 606,698
Claims priority, application Japan, May 28, 1983, 58-79738
Int. Cl.[4] B65C *11/00*
U.S. Cl. 156—384 **8 Claims**



1. A portable label applying system including:

a printer for producing a printed label web by printing a plurality of labels which are adhered in longitudinal series to a web of backing paper;

a take-up cassette adapted to be removably mounted in said printer for receiving the printed label web and also adapted to be removably mounted in a dispenser for removing printed labels from said cassette and applying these printed labels to commodities, said take-up cassette having a first means for generating pressure to hold the backing paper;

an automatic label winding and charging means for use with said printer, comprising:

a cassette guide for guiding said take-up cassette when the latter is to be mounted in said printer,

pressure releasing means for releasing the pressure of the first means thereby releasing the backing-paper,

label guide means for guiding the printed label web to said cassette, and

cutter means for cutting said printed label web;

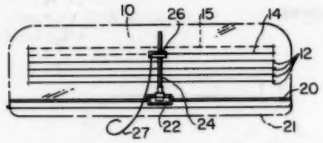
said pressure releasing means including first and second doors biased to open positions in which they allow said pressure generated by said first means to hold said backing paper, and said doors being operable to closed positions in which they abut the first means to release the pressure of the same while forming a clear passage for said label web.

4,552,611

CONDUCTOR APPLYING APPARATUS FOR REAR WINDOW DEFROSTERS

Normand Dery, Sherbrooke, Canada, and Jean-Louis Boudreau, Barton, Vt., assignors to Astrolab Inc., St.-Elie d'oxford, Canada

Filed Aug. 26, 1983, Ser. No. 526,791
Int. Cl.⁴ B32B *31/04;* B44C *7/00*
U.S. Cl. 156—391 **11 Claims**



1. A hand-held flat conductor applying apparatus for applying to the receiving surface of a curved glass pane, namely the rear window in a motor vehicle or the like, a plurality of equidistant, essentially straight, lengths of pre-glued flat conductor defining the heating lines of a rear window resistive defroster, comprising, in combination, a confining guide edge temporarily affixed to and following the curvature of said receiving surface for setting a datum line for said heating lines, said confining guide edge being an elongated thin strip of suitably flexible material having a T-shaped flange defining a track and extending along said elongated thin strip and being perpendicular thereto, a conductor laying head through which passes said length of flat conductor being applied to said receiving surface, a translation carrier engaging said confining guide edge to enable translation of said translation carrier along said confining guide edge, a rigid bar mounting said conductor laying head to said translation carrier, means on said rigid bar supporting said conductor laying head at any one of a plurality of regularly spaced apart points along said rigid bar thereby setting the desired spacing of said heating lines in said rear window resistive defroster, and connecting means detachably coupling said translation carrier to said confining guide edge and promoting smooth translatory motion of said translation carrier and of said rigid bar thereon along said confining guide edge to ensure parallelism of said heating lines and wherein said connecting means comprises a set of small rollers on said translation carrier riding along opposite sides of said track for smooth translation along said confining guide edge and for detachably connecting said translation carrier to said track.

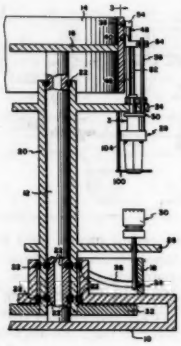
4,552,612

INERTIAL SPIN WELDING OF THERMOPLASTIC AND THERMOPLASTIC COATED CONTAINER PARTS

Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 415,126, Sep. 7, 1982, Pat. No. 4,386,999, which is a continuation-in-part of Ser. No. 234,344, Feb. 3, 1981, abandoned. This application Feb. 9, 1983, Ser. No. 465,135
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.⁴ B23K *27/00;* B29C *27/08;* B29D *23/03*
U.S. Cl. 156—494 **9 Claims**

1. Spin welding apparatus comprising upper and lower mandrel means mounted for vertical movement toward and away from each other along a common vertical axis, said upper mandrel means being adapted to releasably support an open ended cylindrical container body and said lower mandrel means being adapted to releasably support a container bottom of thermoplastic material having an axially upwardly projecting peripheral flange insertable into said container body with a press fit, first drive means for driving at least one of said mandrel means in rotation about said vertical axis relative to the other mandrel means, and second drive means for driving said mandrel means in movement along said vertical axis to seat said container bottom within said container body while said mandrel means are rotating relative to each other to insert and frictionally weld said container bottom in said container body; with radially expansible and contactable body engaging means mounted on the lower end of said upper mandrel means in



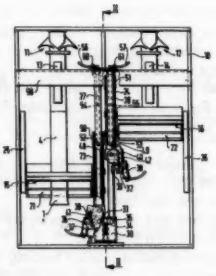
symmetrically disposed relationship about said vertical axis, said engaging means being normally disposed in a contracted position wherein said engaging means may be axially inserted into a container body, and expanding means for radially expanding said engaging means to an expanded position wherein the radially outer surfaces of said expanding means lie on a common cylindrical surface having a diameter equal to the specified internal diameter of said container body.

4,552,613

APPARATUS FOR PRODUCING POUCH PACKAGES IN PAIRS

Hugo Auer, Schwaz, Australia, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,352
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312653
Int. Cl.⁴ B32B *31/18*
U.S. Cl. 156—515 **10 Claims**



1. An apparatus for simultaneously producing pairs of pouch packages from two separate tubes of packaging material, said apparatus having two separate independent operating tubular shaping devices vertically disposed beside one another and having two separate crosswise closure devices incrementally advancing said two tubes of packaging material by the length of one pouch at a time, which devices in an upper position

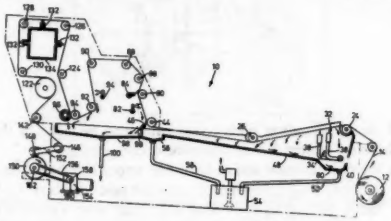
engage the respective tubes of material and in a lower position sever one pouch package at a time from each separate tube of material, and which each said device is moved incrementally up and down by means of a common drive mechanism, in which each said crosswise closure device is disposed on a separate carrier, and that each said carrier is arranged to be removably coupled with a common reciprocating element which is moved up and down by the drive mechanism to form two pouches at the same time.

4,552,614

DEMETALLIZING METHOD AND APPARATUS

Donald E. Beckett, Mississauga, Canada, assignor to Beckett Packaging Limited, Mississauga, Canada

Filed Jun. 18, 1984, Ser. No. 621,609
Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—640 **29 Claims**



1. A continuous method of forming a pattern on a metallized polymer film, which comprises:

providing said metallized polymer film as a continuous web and conveying said continuous web successively through an etchant solution-applying zone, a washing zone and a drying zone,

continuously spray applying an aqueous etchant solution to the metallized surface of said continuous web in said etchant solution applying zone, said continuous web having also located thereon a pattern of etchant-resistant material corresponding to the desired pattern and masking metal from the etchant solution, thereby to effect removal of metal only from the areas of said web contacted by the etchant solution and not having the etchant-resistant material applied thereto,

continuously washing spent etchant solution from said continuous web in said washing zone, and

continuously drying the resulting washed web in said drying zone.

4,552,615

PROCESS FOR FORMING A HIGH DENSITY METALLURGY SYSTEM ON A SUBSTRATE AND STRUCTURE THEREOF

Albert Amendola, Hopewell Junction; Arnold F. Schmeckenbecher, Poughkeepsie, and Joseph T. Sobon, New Paltz, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1984, Ser. No. 612,289
Int. Cl.[4] H05K *3/14*
U.S. Cl. 158—659.1 **18 Claims**

1. A process for forming a top surface metallurgy pattern on a ceramic substrate comprising

providing an unsintered green ceramic substrate,

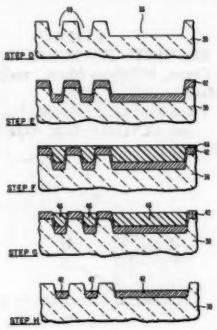
forming indented lines in the surface of the ceramic substrate that defines the desired surface metallurgy pattern,

sintering the ceramic substrate,

depositing a substantially uniform blanket metal layer of at least one metal over at least a portion of the surface of the ceramic substrate including said indented lines, the thickness of said metal layer being less than the depth of said indented lines, the metal being relatively thin on the side walls of the indented lines,

applying a masking layer of material of a thickness in excess of the depth of said indented lines over the metal layer, which material of said masking layer is resistant to an etchant of the metal of the metal layer, and presents a relatively planar top surface,

reducing the thickness of said masking layer by removing a relatively uniform layer portion from the surface, thereby



exposing the metal layer portions that overlie the upper surface of said substrate, but leaving intact the masking layer portions overlying the metal layer portions in the indented lines,

exposing the top surface of said ceramic substrate to an etchant for the metal of the metal layer thereby removing the exposed metal areas but leaving intact the metal layer portions in the indented lines that are covered by said masking layer portions, and

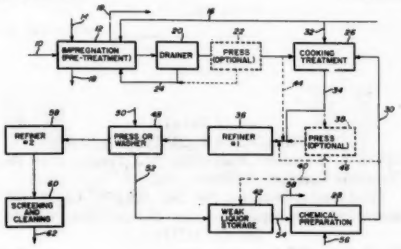
removing the remaining portions of the masking layer.

4,552,616

PULPING PROCESS PRETREATMENT USING A LOWER ALKANOLAMINE IN THE PRESENCE OF AMMONIUM HYDROXIDE

Peter K. Kauppi, North Vancouver, Canada, assignor to New Fibers International Inc., Grand Cayman Island, Cayman Islands

Filed Sep. 29, 1983, Ser. No. 536,967
Claims priority, application Canada, Oct. 20, 1982, 413857
Int. Cl.[4] D21C *1/06, 3/06, 3/20*
U.S. Cl. 162—19 **23 Claims**



1. A pulping process for producing a high yield pulp from woody lignocellulosic material comprising pre-treating said lignocellulosic material by impregnating same with a loweralkanolamine in the presence of ammonium hydroxide, prior to contact with said pulping chemical, in amounts sufficient to improve the dewatering characteristics of the high yield pulp and to cause softening of lignin in said material and to promote

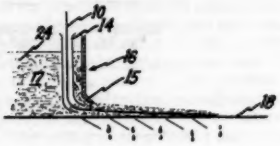
fiber separation, adding a pulping chemical to the impregnated material and mechanically defibrating the material, said pretreatment reducing pulping chemical and refining energy consumption as well as vapor and liquid effluent pollution.

4,552,617

SECURITY FEATURES IN PAPER

Timothy T. Crane, Windsor, Mass., assignor to Crane & Co., Dalton, Mass.

Filed Jun. 13, 1984, Ser. No. 620,276
Int. Cl.[4] D21D *3/00*; D21H *5/10*
U.S. Cl. 162—103 **9 Claims**



1. A method for providing security features or watermarks within paper comprising the steps of:

imparting indicia to the surface of a substrate material which is selectively dissolved at a predetermined temperature during the paper making process;

inserting the indicia bearing substrate within a water slurry containing paper fibers during dewatering of said water slurry and maintaining said slurry at a first temperature less than said predetermined temperature to incorporate said substrate within said paper fibers: while dewatering said slurry to consolidate said paper fibers into a wet paper sheet without dissolving said substrate; and

dissolving said substrate at said predetermined temperature to incorporate said substrate within said paper sheet and to leave said indicia within said paper sheet without dissolving said paper fibers during drying of said wet paper sheet.

4,552,618

STABILIZED ABSORBENT BOARDS

Stephen L. Kopolow, Plainsboro, N.J., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 289,609, Aug. 3, 1981, abandoned. This application Apr. 11, 1984, Ser. No. 599,102
Int. Cl.[4] D21H *5/12*
U.S. Cl. 162—157.1 **7 Claims**

1. A method for providing a board including hydrocolloidal fibers, said board having increased resistance to deformation in the wet state while still maintaining the capacity to absorb body fluids comprising the steps:

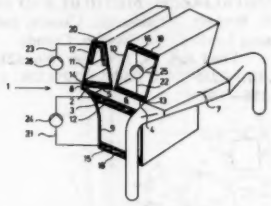
forming said board comprising said hydrocolloidal fibers from an aqueous slurry comprising said hydrocolloidal fibers; heating said board at a temperature ranging from about 150° C. to about 250° C. for a period of about 3 to about 30 minutes.

4,552,619

THERMAL STABILIZING SYSTEM FOR A HEADBOX OF A PAPERMACHINE

Sakari Laitinen, Huutjärvi, and Tapani Nyman, Karhula, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Apr. 16, 1984, Ser. No. 600,429
Claims priority, application Finland, May 11, 1983, 831634
Int. Cl.[4] D21F *1/02, 1/04*
U.S. Cl. 162—336 **4 Claims**



1. In combination with a papermachine headbox, a thermal stabilizing system for said headbox, comprising:

a lower box beam and at least one upper box beam, said box beams being positioned to support said headbox, each said beam having an inner wall in contact with a stock flowing through said headbox and an outer wall and each said beam being provided with at least one liquid space extending lengthwise of the beam and adjoining each said inner and outer wall, each said liquid space having a liquid, separate from said stock, flowing therethrough;

liquid circulation means for circulating the liquid between each said space of each beam,

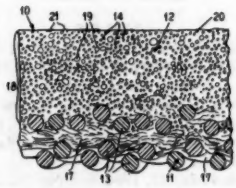
and means for heating said outer walls to a temperature equal to that of the inner walls, said heating means consisting of the flowing stock, by heat transfer from the flowing stock to the liquid flowing through the liquid spaces in the box beams, and said thermal stabilizing system being devoid of control devices.

4,552,620

PAPER MACHINE BELT

Richard J. Adams, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 19, 1983, Ser. No. 533,309
Int. Cl.[4] D21F *3/02*
U.S. Cl. 162—358 **7 Claims**



1. A belt for conveying and covering paper webs passing through pressure nips of paper making machines which comprises an endless looped blanket of woven fabric and an integral continuous impervious layer of urethane plastics material covering the paper web receiving face of the blanket and penetrated into the woven fabric providing an inseparable bond uniting the fabric and layer, said layer having closed isolated pores throughout the thickness thereof and a ground finished granite stone-like surface receiving the web, said surface having pores ranging in size from 0.019 to 0.185 mm

uncovered at said surface and said belt having a durometer hardness of at least 70 on the A scale.

4,552,621

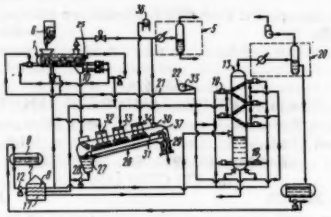
APPARATUS FOR THERMAL DECOMPOSITION OF POLYMERIC MATERIALS

Genrikh D. Lyakhevich, Minsk; Anatoly P. Khimanych, Bobruisk; Vasily G. Suzansky, Bobruisk, and Vulf P. Kovalerchik, Bobruisk, all of U.S.S.R., assignors to Belorussky Politekhnichesky Institut, Minsk, U.S.S.R.

Filed Jun. 17, 1983, Ser. No. 505,277

Int. Cl.⁴ C10B *1/00*

U.S. Cl. 202—84 **9 Claims**



1. Apparatus for the thermal decomposition of polymeric material containing solid impurities, which comprises:

reaction chamber means for thermally decomposing the polymeric material and forming a suspension containing the polymeric material and the solid impurities;

separator means for removing the solid impurities from the suspension, the separator means being located downstream from the reaction chamber means and being in communication with the reaction chamber means for receiving the suspension therefrom;

the separator means including an inclined conveyor having an upper and a lower end, with the inclined conveyor receiving the suspension containing the polymeric material from the reaction chamber means adjacent the lower end of the conveyor such that the suspension and polymeric material in the suspension flow off and are discharged from the lower end of the conveyor, and such that the conveyor transports the solid impurities upward for discharge from the upper end of the conveyor; and

distillation means for further thermally decomposing the polymeric material, the distillation means being in communication with the separator means for receiving the suspension from the separator means after the solid impurities have been removed from the suspension by the inclined conveyor of the separator means.

4,552,622

CLEANING APPARATUS FOR THE SEALING SURFACES OF LEVELING DOORS AND LEVELING DOOR FRAMES OF BATTERY-TYPE COKE OVENS

Hans-Jurgen Kwasnik, Herne, and Hans-Gunter Piduch, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

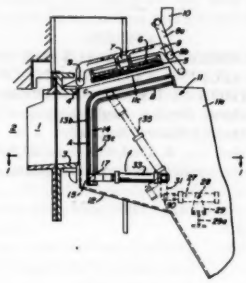
Filed May 1, 1984, Ser. No. 605,893

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317185

Int. Cl.⁴ C10B *43/00*

U.S. Cl. 202—241 **9 Claims**

1. In a coke oven battery having leveling door frames and leveling doors rotatable from positions in which they engage the door frames to positions where they are rotated upwardly to permit access to a coke oven chamber through the door frame, the combination of means carried on a coke-pushing machine for cleaning the sealing surfaces of said leveling doors and leveling door frames, said cleaning means comprising a casing of substantially channel-shaped cross section movable on the pushing machine toward and away from the leveling door frame and having side and bottom walls with forward edges adapted to extend around the leveling door frame and an open top above which a leveling door is positioned when it is rotated upwardly, guideways mounted on the side walls of the casing, each guideway having a first portion extending parallel to the leveling door frame and extending along substantially the entire length of the leveling door frame, each guideway also having a second portion communicating with the first portion and extending parallel to sealing surfaces of a leveling



door when the door is rotated upwardly to permit access to a coke oven chamber, a carriage extending between and movable along said guideways, and liquid nozzles carried on said carriage and adapted to be directed at the sealing surfaces of the leveling door frame and the sealing surfaces of the leveling door when rotated upwardly, the nozzles being connected through hoses to a supply of high-pressure liquid, the arrangement being such that as the carriage moves along said guideways, high-pressure liquid issuing from said nozzles will clean the sealing surfaces of the leveling door frame and the upwardly rotated leveling door.

4,552,623

COKE OVEN DOOR CLOSURE CONSTRUCTION

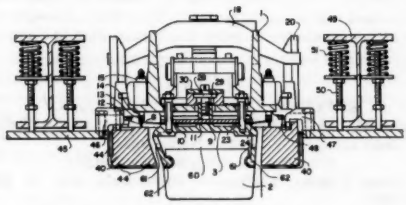
Klaus Urbye, and Werner Abendroth, both of Haltern, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co., Kg., Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,600

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311183

Int. Cl.⁴ C10B *25/06*

U.S. Cl. 202—248 **18 Claims**



1. A door closure for defining and closing an opening in a coke oven, comprising a door frame, a door body, a plurality of plug holders connected to plugs and carried by said door body including a separate upper and a separate lower plug holder arranged adjacent and fixedly mounted to the top and bottom respectively of the door body, and at least one movable intermediate plug holder between said upper and lower plug holders, a sealing diaphragm between said door body and said

upper and lower intermediate plug holders and having a marginal portion extending beyond said plug holders and terminating in a sealing edge around its periphery bearing against the frame in a sealing engagement therewith, biasing means biasing said sealing edge into engagement with the frame, a movable back-up plate connected to said intermediate plug holder and a corresponding portion of the diaphragm and disposed between said diaphragm and said door body, and adjustable means connected to said door body and connected to said plate for varying the position of the plate and said intermediate plug holder and said corresponding portion of said diaphragm relative to said door body.

4,552,624

ELECTROCHEMICAL APPARATUS FOR MONITORING AND/OR MEASURING A COMPONENT OF A GAS AND A METHOD OF USING SAID APPARATUS

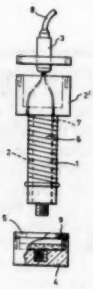
Andrew S. Clarkson, Preston, England, assignor to British Nuclear Fuels Limited, Risley, England

Filed Aug. 8, 1983, Ser. No. 521,350

Claims priority, application United Kingdom, Aug. 23, 1982, 8224183

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T **16 Claims**



1. An electrochemical device for monitoring and quantitatively analysing hydrogen fluoride in ambient atmosphere or a gas stream and of the kind which employs a deliquescent electrolyte, characterised by the combination of the employment of a bromide/bromate electrolyte, and the employment of a cathode which has a larger contact area with the electrolyte and with the atmosphere or gas stream compared with the anode.

7. A method for the detection, monitoring and/or quantitative analysis of hydrogen fluoride in ambient atmosphere or a gas stream, comprising exposing to the ambient atmosphere or gas stream an electrochemical device according to claim 4.

4,552,625

REFERENCE ELECTRODE ASSEMBLY

Paulus M. Van Der Velden, Hengelo, Netherlands, assignor to Cordis Europa N.V., Roden, Netherlands

Filed Dec. 29, 1983, Ser. No. 566,576

Claims priority, application Netherlands, Jan. 7, 1983, 8300057

Int. Cl.⁴ G01N *27/46, 27/30*

U.S. Cl. 204—1 T **13 Claims**

1. A reference electrode assembly, comprising:

an ion-specific electrode, said electrode being encapsulated within and contacted by a polymer matrix, said polymer matrix being a weak electrolyte having a strong affinity for hydrogen ions, the bulk of said polymer matrix having an open cell structure which contains a liquid as an electrode potential causing agent and its surface being such that it forms a barrier preventing a free and open connection to the environment of the reference electrode, said polymer matrix being within a support member, wherein

said ion-specific electrode is a hydrogen ion-specific electrode.

4,552,626

METAL PLATING OF POLYAMIDE THERMOPLASTICS

Richard M. Stevenson, Grosse Pointe Woods, Mich., assignor to Michael Landney, Jr., Grosse Pointe Shores, Mich.

Filed Nov. 19, 1984, Ser. No. 673,185

Int. Cl.⁴ C25D *5/56*

U.S. Cl. 204—20 **16 Claims**

1. A method of metal plating a surface of an article of a thermoplastic resin with a filler therein comprising the steps of; providing an article of at least one of a polyester and polyamide resin with a weight average molecular weight of at least about 10,000 and filled with about 5 to 60% by weight of at least one of metal, metal salt and mineral fillers, cleaning and making hydrophillic a surface of said article by contacting said surface with an alkaline cleaning solution and a surfactant prior to removing filler from said surface, removing at least a portion of the filler from said surface by contacting said surface with an organic or mineral acid having a normality of not greater than about 4.0 and which will dissolve at least a portion of said filler, after removing said filler electroless plating said surface from which filler has been removed to deposit thereon and adhere thereto an electrically conductive metallic layer of at least one of cobalt, nickel and copper, driving said electroless plated surface to remove essentially all moisture therefrom by heating to an elevated temperature of not more than about 190° F. for not more than 30 minutes, after drying said electroless plated surface electroplating such surface to deposit thereon and adhere thereto at least one metallic layer of at least one of copper and nickel, and thereafter electroplating such electroplated surface to deposit on and adhere to said layer at least one layer of at least one of nickel and chromium.

4,552,627

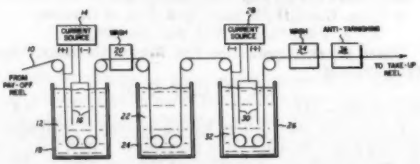
PREPARATION FOR IMPROVING THE ADHESION PROPERTIES OF METAL FOILS

Arvind Parthasarathi, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1984, Ser. No. 670,239

Int. Cl.⁴ C25D *5/34, 17/00*

U.S. Cl. 204—27 **19 Claims**



1. A process for improving the adhesive properties of a metal or metal alloy material, said process comprising:

forming a substantially uniform layer of metal oxide on at least one surface of said material;

non-electrolytically converting the oxide layer into a substantially uniform layer of fresh metal on said at least one surface and thereby rendering said at least one surface more uniformly electrochemically active; and

forming a plurality of dendritic structures on said at least one surface to improve said adhesive properties.

4,552,628

PALLADIUM ELECTROPLATING AND BATH THEREOF

Jeannine Wilcox, North Plainfield, and George A. Karustis, Westfield, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 416,412, Sep. 9, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 584,282

Int. Cl.⁴ C25D *3/50*

U.S. Cl. 204—47 **23 Claims**

1. An aqueous acidic bath for electroplating palladium comprising a substantially halide-free and thiourea-free aqueous solution of: (a) a palladium tetraammine compound obtained by reacting $Pd(R)_2(NO_2)_{,2}$ wherein R is NH_3 or an amine, with ammonium hydroxide; (b) sulfamate anions; (c) ammonium cations; and (d) optionally alkali metal cations; wherein at least 25% of the cations are ammonium, said bath has a pH from about 5 to 7.

4,552,629

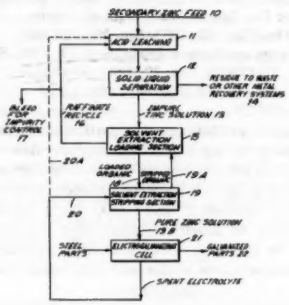
ELECTROGALVANIZING UTILIZING PRIMARY AND SECONDARY ZINC SOURCES

Willem P. C. Duyvesteyn, Benthuisen, Netherlands, and Robert F. Hogsett, Arvada, Colo., assignors to Amax, Inc., Greenwich, Conn.

Filed Jan. 31, 1985, Ser. No. 696,985

Int. Cl.⁴ C25C *3/22*

U.S. Cl. 204—55 R **10 Claims**



1. A process for producing electrogalvanized articles from primary and secondary zinciferous materials, selected from the group consisting of zinc oxide ores, calcines, steel plant dust, zinc dross and/or metallics, and zinc residues containing iron, lead and calcium compounds, and at least one of the elements cadmium and aluminum as compounds thereof, and chloride and fluoride salts which comprises,

mixing a charge of said zinciferous material with an acid leach solution containing a mixture of chloride and sulfate ions,

the amount of sulfate ions as sulfuric acid being at least stoiciometrically sufficient to react with zinc to form a soluble sulfate thereof and with lead and calcium to form a sulfate precipitate thereof,

leaching said oxidic zinciferous material with said solution at an elevated temperature below the boiling point of said solution maintained at a pH in the range of about 2 to 3.5 to inhibit dissolution of iron contained in said zinciferous material,

subjecting said solution to solid-liquid separation to remove the lead and calcium sulfate precipitate and other solids and provide a filtrate containing zinc, some iron and at least one of aluminum and cadmium,

oxidizing said filtrate and adjusting the pH thereof to a level selective to the precipitation of any iron and aluminum present,

separating the precipitate from said filtrate containing zinc, cadmium and impurities,

separating zinc from said filtrate at an organic solvent extraction stage by using an organic solvent selective to the removal of zinc,

stripping the zinc from said solvent in a stripping stage using an acid solution containing sulfuric acid of pH below about 1.5 to provide a purified zinc solution for electrogalvanizing,

recycling the stripped organic to said organic solvent extraction stage,

contacting said electrogalvanizing solution with a ferrous metal part to be plated, wherein the ferrous metal part is employed as a cathode relative to an insoluble anode immersed in said solution,

electrogalvanizing said ferrous metal part by passing a current from said insoluble anode to said ferrous metal part as the cathode and thereby produce spent electrogalvanizing solution, and

recycling said spent electrogalvanizing solution to the stripping stage and/or the leaching stage.

4,552,630

CERAMIC OXIDE ELECTRODES FOR MOLTEN SALT ELECTROLYSIS

Douglas J. Wheeler, Cleveland Heights, Ohio; Jean-Jacques R. Duruz, Geneva, Switzerland; Ajit Y. Sane, Willoughby, Ohio, and Jean-Pierre Derivaz, Geneva, Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

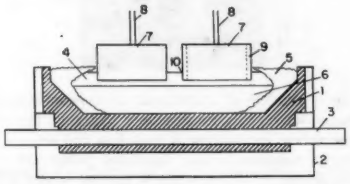
PCT No. PCT/US80/01609, § 371 Date Jul. 24, 1981, § 102(e) Date Jul. 24, 1981, PCT Pub. No. WO81/01717, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 4, 1980, Ser. No. 298,243

Claims priority, application United Kingdom, Dec. 6, 1979, 7942180

Int. Cl.⁴ C25C *3/06;* **C25B** *11/04*

U.S. Cl. 204—67 **26 Claims**



1. In a process for the production of a metal by electrolysis of a metal compound dissolved in a molten salt electrolyte the improvement which comprises conducting said electrolysis using an anode comprising a body consisting essentially of a ceramic oxide material of spinel structure, characterized in that said material has the formula:

$$M_{Ix}\, M_{III\,3-x}\, O_4 \cdot y\, M''_{III}\, O_{n/2}$$

where:

M_I is one or more divalent metals from the group Ni, Co, Mg, Mn, Cu and Zn;

x is 0.5–1.0;

M_{II} is one or more divalent/trivalent metals from the group Ni, Co, Mn, and Fe, but excluding the case where M_I and M_{II} are both the same single metal;

$M_{III}''^{+}$ is one or more metals from the group Ti^{4+}, Zr^{4+},

Sn^{4+}, Fe^{4+}, Hf^{4+}, Mn^{4+}, Fe^{3+}, Ni^{3+}, Co^{3+}, Mn^{3+}, Al^{3+}, Cr^{3+}, Fe^{2+}, Ni^{2+}, Co^{2+}, Mg^{2+}, Mn^{2+}, Cu^{2+}, Zn^{2+} and Li^{1+}, where n is 1, 2, 3 or 4 depending upon the valence state of M_{III};

and the value of y is compatible with the solubility of

$$M^{I}_{III}O_{n/2}$$

in the spinel lattice and between 0 and 0.2, providing that, when y=0, then at least one of the following conditions is met:

(A) X is a value less than 0.99;

(B) there are at least two metals M_I;

(C) there are at least two metals M_{II} which are not in equal whole atom proportions.

4,552,631

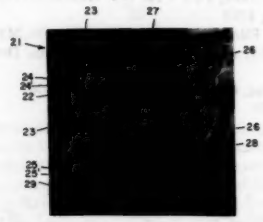
REINFORCED MEMBRANE, ELECTROCHEMICAL CELL AND ELECTROLYSIS PROCESS

Thomas C. Bissot, Newark, and Stephen Li, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1983, Ser. No. 473,962

Int. Cl.⁴ C25B *1/46, 13/02, 13/08*

U.S. Cl. 204—98 **57 Claims**



1. In a reinforced fluorinated cation-exchange polymer membrane which is impermeable to hydraulic flow of liquid, said membrane comprising at least first and second layers of fluorinated polymers whose functional groups are —CFZ—COOM groups or —CFQ—SO_3M groups, where M is H, Na, K or NH_4, Z is F, CF_3 or CF_2Cl, and Q is F, Cl, C_1 to C_{10} perfluoroalkyl or CF_2Cl, said layers when adjacent being in adherent contact with one another, said first layer being of polymer whose functional groups are —CFZ—COOM groups and said second layer being of polymer whose functional groups are —CFQ—SO_3M groups, the improvement wherein said membrane has a hydrogen bubble release layer at the outer surface of said first layer, has voids at the outer surface of said second layer characterized by a void volume of 5 to 40% and an open are of 15 to 100%, and wherein said membrane has reinforcement strands partially or completely embedded therein, and each said polymer with —CFZ—COOM groups has an equivalent weight of 670 to 1500 and each said polymer with —CFQ—SO_3M groups has an equivalent weight of 600 to 1500.

54. The membrane of claim 49 or 53 wherein said membrane has a hydrogen bubble release layer at the outer surface of said first layer.

4,552,632

HYDROMETALLURGICAL METHOD OF EXTRACTION OF COPPER FROM SULPHIDE-CONTAINING MATERIAL

Einar Andersen, and Gunnar H. Boe, both of Kr-sand, Norway, assignors to Elkem a/s, Oslo, Norway

Filed Jul. 5, 1984, Ser. No. 627,773

Claims priority, application Norway, Jul. 8, 1983, 832496

Int. Cl.⁴ C25C *1/12*

U.S. Cl. 204—107 **4 Claims**

1. A method for extraction of copper from sulphide ores or concentrates by leaching the ore or concentrates by means of iron (III) chloride and copper (II) chloride containing leach solution, characterized in that the leaching process is regulated in order to keep the red-ox potential between 430 mV and 460 mV whereby iron (III) chloride is reduced to iron (II) chloride while copper (II) chloride is kept in the bivalent state and the copper content in the ore or concentrate is leached as copper (II) chloride, whereafter the pregnant leach solution is contacted by a pyridine carboxylic ester extractant, said extractant being an organic complex-ion forming extractant of which the extraction properties are dependent on the chloride concentration whereby copper (II) chloride is extracted from the pregnant leach solution into the organic phase.

4,552,633

FINE PARTICULATE FOR USE IN CLINICAL TESTING AND A PROCESS FOR PRODUCING THEREOF

Minoru Kumakura; Isao Kaetsu; Mieko Suzuki, and Masakazu Adachi, all of Gunma, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Japan Immunoresearch Laboratories Co., Ltd., Gunma, both of, Japan

Filed Sep. 22, 1983, Ser. No. 534,661

Claims priority, application Japan, Sep. 29, 1982, 57-170028; Sep. 29, 1982, 57-170029; Sep. 29, 1982, 57-170030

Int. Cl.⁴ C08F *2/48, 2/54, 16/34*

U.S. Cl. 204—159.21 **15 Claims**

1. A process for producing a fine particulate carrier for use in clinical testing having a generally uniform size within the range of 0.5 to 20 microns and an aldehyde group on the surface by exposing to light or ionizing radiation, at temperatures in the range of between 5° and −100° C., a polymerizable monomer having an aldehyde group and a polymerizable double bond in the same molecule while maintaining said monomer at temperatures within said temperature range.

4,552,634

RADIATION HARDENED LIFT-OFF CORRECTION MEDIUM AND PROCESS OF MANUFACTURE

Terence E. Franey, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 419,101, Sep. 16, 1982, Pat. No. 4,434,207. This application Oct. 31, 1983, Ser. No. 547,177

Int. Cl.⁴ C08J *3/28;* **C08L** *33/08*

U.S. Cl. 204—159.23 **13 Claims**

1. A material suitable for use as a bonding material under impact for lift-off correction of printing consisting essentially of the ionizing-radiation-cured product of the mixture of a triacrylate consisting essentially of acrylate moieties and an alkyl moiety and a polyacidic acid of the fatty-acid type having at least one unsaturated ring structure of carbon molecules.

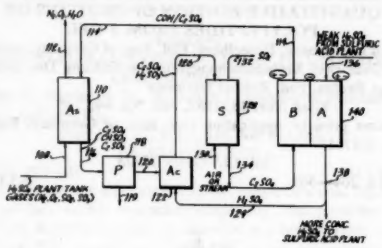
4,552,635
ELECTRODIALYTIC METHODS FOR REMOVAL OF SULFUR OXIDES FROM WASTE GASES

Theodore J. Jenczewski, Sherrill, N.Y., and William H. Skinner, Jr., Budd Lake, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 490,995, May 2, 1983, abandoned. This application Aug. 9, 1984, Ser. No. 639,528

Int. Cl.⁴ B01D *13/02*

U.S. Cl. 204—182.4 **23 Claims**



1. A method for removing and recovering SO_2 and SO_3 from gases, and regenerating the process liquors, which comprises the steps of:

(a) contacting, in a first reaction zone, gases containing SO_2 and SO_3 with a reaction liquid comprising aqueous hydroxide to produce an aqueous salt solution containing aqueous soluble sulfites, bisulfites and sulfates, and a gas comprising water vapor and depleted in SO_2 and SO_3;

(b) contacting, in a second reaction zone, said aqueous salt solution with a reaction liquid comprising sulfuric acid and water to form an aqueous solution comprising sulfurous acid and aqueous soluble sulfates;

(c) separating the sulfurous acid from said aqueous solution by liberating SO_2 as a gas therefrom;

(d) providing an electrodialytic water splitter comprising at least one unit cell, each unit cell comprising an acid and a base compartment;

(e) feeding the liquid comprising aqueous soluble sulfates to the base compartment of the electrodialytic water splitter;

(f) feeding a liquid comprising dilute aqueous sulfuric acid and substantially free of soluble sulfate salts to the acid compartment of the electrodialytic water splitter;

(g) passing current through said electrodialytic water splitter to produce a liquid enriched in sulfuric acid in the acid compartment, and a liquid comprising aqueous hydroxide in the base compartment.

4,552,636
PROCESS FOR REMOVING AMMONIUM-IONS IN AN OXIME PREPARATION FROM A HYDROXYL-AMMONIUM SALT

Franciscus van den Brink, Geldrop, and Marinus Alfenaar, Schinnen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 4, 1984, Ser. No. 616,681

Claims priority, application Netherlands, Jun. 10, 1983, 8302072

Int. Cl.⁴ B01D *13/02;* **C07C** *131/00*

U.S. Cl. 204—182.4 **4 Claims**

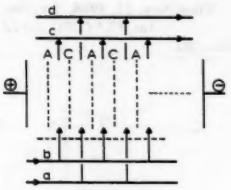
1. A process for preparing a hydroxylammonium salt and an oxime comprising:

conducting a synthesis of a hydroxylammonium salt in a first reaction zone;

synthesizing an oxime from said hydroxylammonium salt and an aldehyde or ketone in a second reaction zone;

circulating an aqueous acid reaction medium between the hydroxylammonium synthesis zone and the oxime synthesis zone wherein a reducable nitrogen source in the form of nitrate ions or nitrogen monoxide is continuously supplied to said circulating rection medium being fed to the first reaction zone whereby ammonium, ion by-products are formed during the reduction of the nitrogen source in said first reaction zone;

subjecting the reaction medium from the second reaction zone to an electrodialysis treatment with an electrodialysis



membrane, wherein a first diluate flow composed of said reaction medium passes along one side of said electrodialysis membrane and a discharge concentrate flow passes along the other side of said electrodialysis membrane whereby ammonium ions pass from said first diluate flow through said membrane into said discharge concentrate flow.

4,552,637
CELL FOR THE REFINING OF ALUMINIUM

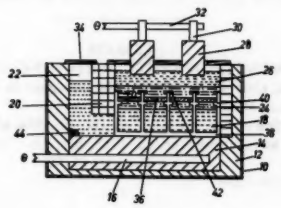
Sylvestre Viré , Neuhausen am Rheinfall, and Ludwig Gauckler, Schaffhausen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 5, 1984, Ser. No. 586,283

Claims priority, application Switzerland, Mar. 11, 1983, 1343/83

Int. Cl.⁴ C25C *3/08, 7/04*

U.S. Cl. 204—243 R **13 Claims**

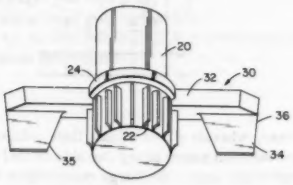


1. A thermally insulated cell for the electrolytic purification of aluminum, comprising a trough having an outer steel tank, a refractory lining and a carbon base containing anodically connected iron bars; a melt of an aluminum alloy doped with at least one heavy metal and having a density ρ_1 forms the anode; a layer of molten electrolyte material resting on the anode and having a density ρ_2; a top layer of molten extra-high purity aluminum and having a density ρ_3 forms the cathode; and graphite cathodes which are fixed to the cathode cell structure and dip from above into the extra-high purity aluminum wherein ρ_1 is greater than ρ_2 which is greater than ρ_3, the improvement which comprises an exchangeable separator horizontally located at least partially within said cell and consisting of a porous material resistant to the electrolyte and to metal, said separator being freely movable in the vertical direction a distance (h) defined by a corrosion-resistant, refractory frame wherein the porosity of the separator allows the electrolyte and metal to pass through without any significant additional loss of potential.

4,552,638
ELECTRODE ASSEMBLY HAVING IMPROVED CURRENT DISTRIBUTION FOR USE IN AN ELECTROLYTIC REDUCTION CELL

Robert L. Voegel, and Kenton B. Wright, both of Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,077
Int. Cl.⁴ C25D *17/12*
U.S. Cl. 204—286 **16 Claims**



1. An improved electrode assembly for use in a cell for the production of metal by electrolytic reduction in a molten salt bath comprising:

(a) a nonmetallic conductive electrode having a top surface;

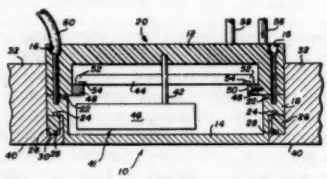
(b) a central current carrying metallic support shaft received in a central bore in said electrode extending axially downward from said top surface; and

(c) metallic fin members extending radially from said central support shaft in said electrode, said metallic fin members comprising a plurality of gate members extending radially from said central shaft adjacent said top surface of said electrode and wing members extending from said gate members downwardly into said electrode from said top surface, said gate members each having a width exceeding the depth of said gate member at least adjacent the top surface of said electrode to increase the surface area of said gate member whereby heat generated adjacent the interface between said nonmetallic conductive electrode and said metallic fin members may be dissipated.

4,552,639
MAGNETRON SPUTTER ETCHING SYSTEM

Charles B. Garrett, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 632,790, Jul. 20, 1984, abandoned. This application Mar. 13, 1985, Ser. No. 712,452
Int. Cl.⁴ C23C *15/00*
U.S. Cl. 204—298 **16 Claims**



1. A magnetron etching device, comprising in combination,

a low pressure gas chamber for positioning an object having a surface to be etched;

means for creating an electrical field between said surface to be etched and a collector surface means;

a magnetic source connected to a means for moving said magnetic source with respect to the object to be etched, such that the lines of magnetic flux created move above the etch surface of the object to be etched, said magnetic source being spaced from said object when said object is positioned in said gas chamber and said magnetic source being located on the etch surface side of the object to be etched;

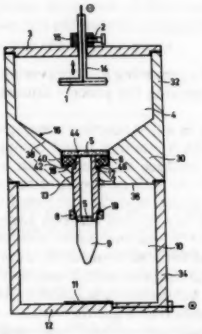
means for injecting an inert gas into said chamber;

whereby the etched material may be transferred from the object to the collector surface means and the motion of the magnetic source can etch the object uniformly.

4,552,640
ELECTROPHORETIC APPARATUS FOR THE QUANTITATIVE ELUTION OF PROTEINS OR POLYPEPTIDES FROM A GEL

Jürgen Kartenbeck, Heidelberg, Fed. Rep. of Germany, assignor to Deutsches Krebsforschungszentrum Stiftung Des Offentichen Rechts, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,735
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147611
Int. Cl.⁴ G01N *27/28*
U.S. Cl. 204—301 **8 Claims**



1. An apparatus for the quantitative elution of proteins or polypeptides from a gel by means of electrophoresis, said apparatus comprising:

an upper electrode chamber for holding a buffer solution containing the gel from which the proteins or polypeptides are to be eluted,

an upper electrode in the upper electrode chamber;

a lower electrode chamber for holding a buffer solution and disposed beneath said upper electrode chamber,

a lower electrode in the lower electrode chamber;

a septum separating the upper chamber from the lower chamber;

a connecting passage in the septum for connecting said upper and lower electrode chambers; and

a collecting capsule for collecting the proteins of polypeptides, the collecting capsule being disposed at the end of said connecting passage in said lower electrode chamber, and adapted to be suspended in the buffer solution which is to be held in said lower electrode chamber.

4,552,641
PROCESS FOR PREPARING A PLATINUM SURFACE ON TIN OXIDE SUBSTRATE

Herbert A. Laitinen, 337 Leigh Hall, Gainesville, Fla. 32611, and James R. Waggoner, 4085 Nobel Dr., #13, San Diego, Calif. 92122

Filed Dec. 28, 1983, Ser. No. 566,478
Int. Cl.⁴ C25D *3/50, 5/34*
U.S. Cl. 204—32.1 **10 Claims**

6. The process of preparing a platinum-coated tin oxide substrate which comprises:

(a) soaking for 15–60 minutes a tin oxide substrate in a solu-

tion of metal hydroxide having a concentration of 5–15 molar,

(b) removing the substrate from the solution and washing it to be substantially free of hydroxide,

(c) immersing the washed substrate in a solution of $Na_2Pt(OH)_6$ in 0.001M to 0.1M KOH and applying to the substrate an electric potential of +0.1 to +0.7 volt; and

(d) recovering the substrate coated with a thin layer of platinum in the amount of 0.01 to 0.10 micrograms of platinum per cm^2 of true surface area.

4,552,642

METHOD FOR CONVERTING COAL TO UPGRADED LIQUID PRODUCT

William P. Hettinger, Jr., Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 27, 1983, Ser. No. 507,864
Int. Cl.[4] C10G *1/08*
U.S. Cl. 208—10 **32 Claims**

1. A process for achieving hydrogenation of a coal liquefaction product which comprises dispersing coal particles in a heavy oil liquefaction solvent material at a temperature in the range of 399° C.–471° C. (750°–880° F.) in the presence of hydrogen at a pressure in the range 2000–4000 psig and utilizing a colloidal matrix material coated with one or more hydrogenating metals as a catalyst composition dispersed in said liquefaction solvent for accelerating coal liquefaction, hydrogenation and removal of sulfur, nitrogen and oxygen therefrom.

4,552,643

ANTIFOULANTS FOR THERMAL CRACKING PROCESSES

Randall A. Porter, and Larry E. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 22, 1985, Ser. No. 693,436
Int. Cl.[4] C10G *9/00, 9/12, 9/16*
U.S. Cl. 208—48 AA **21 Claims**

1. A method for reducing the formation of coke on the metals which are contacted with a gaseous stream containing hydrocarbons in a thermal cracking process comprising the step of contacting said metals with an antifoulant selected from the group consisting of a combination of tin and copper, a combination of antimony and copper and a combination of tin, antimony and copper.

4,552,644

DUOCRACKING PROCESS FOR THE PRODUCTION OF OLEFINS FROM BOTH HEAVY AND LIGHT HYDROCARBONS

Axel R. Johnson, North Babylon, N.Y.; Swami Narayanan, Westwood, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation of Ser. No. 431,588, Sep. 30, 1982, Pat. No. 4,492,624. This application Feb. 24, 1984, Ser. No. 583,135
The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.
Int. Cl.[4] C10G *9/14, 51/06*
U.S. Cl. 208—78 **1 Claim**

1. A process for the thermal cracking of heavy hydrocarbon feed to produce olefins comprising:

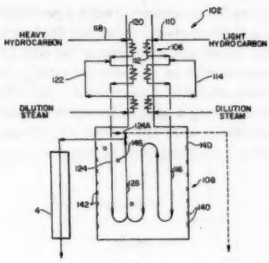
(a) diluting the heavy hydrocarbon feed with steam in a ratio of 0.2 or less pound of steam per pound of heavy hydrocarbon;

(b) elevating the temperature of the heavy hydrocarbon with the steam diluent to a temperature to effect partial thermal cracking;

(c) mixing a stream of light hydrocarbon feedstock which is lighter than the heavy hydrocarbon feed with steam diluent;

(d) thermally cracking the light hydrocarbon feedstock to completion to produce principally olefins;

(e) delivering the completely cracked light hydrocarbon effluent to the stream of partially cracked heavy hydrocarbon to form a composite stream, said light hydrocarbon effluent providing heat for subsequent cracking and



serving as a diluent for the partially cracked heavy hydrocarbon;

(f) further cracking the composite stream to the required degree of completion; and

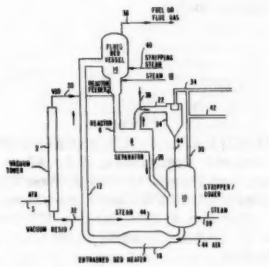
(g) quenching the effluent from the cracked composite stream of heavy and light hydrocarbon to terminate the reactions.

4,552,645

PROCESS FOR CRACKING HEAVY HYDROCARBON TO PRODUCE OLEFINS AND LIQUID HYDROCARBON FUELS

Robert J. Gartside, Wellesley, Mass.; Axel R. Johnson, North Babylon, N.Y., and Joseph L. Ross, Houston, Tex., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Mar. 9, 1984, Ser. No. 587,952
Int. Cl.[4] C10G *51/06, 57/00*
U.S. Cl. 208—80 **10 Claims**



1. A process for the production of olefins or light hydrocarbon fuels comprising the steps of:

(a) separating a heavy hydrocarbon into a light hydrocarbon fraction and a heavy hydrocarbon fraction;

(b) thermally cracking the light hydrocarbon fraction with heat supplied by hot particulate solids;

(c) separating the cracked product from the hot particulate solids;

(d) delivering the separated particulate solids to a stripper/coker;

(e) introducing the heavy hydrocarbon into the stripper/coker to produce vaporized hydrocarbon and coke;

(f) combusting coke produced in the reactor and stripper/coker to heat the particulate solids,

(g) returning the heated particulate solids to the thermal cracking reactor.

4,552,646

DEARSENATING OF SHALE OIL WITH METAL CHLORATES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 24, 1984, Ser. No. 685,413
Int. Cl.[4] C10G *25/06, 17/02, 17/04, 17/09*
U.S. Cl. 208—90 25 Claims

1. A process for removing at least a portion of arsenic impurities from a hydrocarbon-containing feed stream, which contains arsenic impurities, comprising the step (A) of contacting said feed stream with an aqueous extractant, which comprises (a) at least one substantially dissolved metal chlorate, and (b) at least one acid having a pKa of less than 3, under suitable dearsenating conditions so as to produce a hydrocarbon-containing stream having a reduced level of arsenic.

4,552,647

PROCESS FOR CRACKING HIGH-BOILING HYDROCARBONS USING CONTINUOUS ADDITION OF ACIDITY ENHANCING ADDITIVES

William P. Hettinger, Jr., Russell; Stephen M. Kovach, Ashland, and Hubert W. Beck, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 474,619, Mar. 11, 1983, Pat. No. 4,496,665, which is a continuation-in-part of Ser. No. 277,751, Mar. 30, 1981, Pat. No. 4,432,890. This application Apr. 18, 1984, Ser. No. 600,747
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—120 20 Claims

1. A process for converting residual hydrocarbon stocks including, reduced crude and the like, containing greater than 4 ppm of nickel plus vanadium and 2% Conradson Carbon, said process utilizing a zeolite-containing catalyst comprising at least about 2000 ppm of Ni+V contaminants, said process comprising continuous addition to said feed stock or catalyst an additive comprising Ti, Zr or mixtures thereof, so as to maintain conversion activity and selectivity in the presence of said contaminating metals.

4,552,648

FLUIDIZED CATALYTIC CRACKING PROCESS

Edward J. Rosinski, Pedricktown, N.J.; Albert B. Schwartz, Philadelphia, and Francis G. Dwyer, West Chester, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 8, 1984, Ser. No. 577,941
Int. Cl.[4] C10G *11/05*
U.S. Cl. 208—120 25 Claims

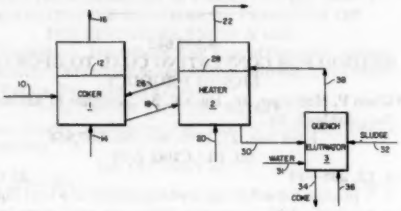
1. In a process for catalytically cracking a hydrocarbon feed having an initial boiling point of at least 200° C., a 50% point range of at least 260° C. and an end point of at least 320° C. to improve the octane number of the cracked product which comprises the steps of contacting the feed in a reaction zone under catalytic cracking conditions in the absence of added hydrogen with a catalyst comprising a conventional cracking catalyst to produce a cracked hydrocarbon product which is recovered as a product of the process, the improvement comprising adding to said conventional cracking catalyst a thermally treated zeolite having a mole ratio of SiO_2:Al_2O_3 of about 10:1 to 100:1 and a constraint index of about 1 to 12, wherein said zeolite has been subjected to thermal treatment at thermal treatment conditions sufficient to reduce its alpha activity to about 1 to 10 prior to use in said process, whereby product yield losses are reduced.

4,552,649

FLUID COKING WITH QUENCH ELUTRIATION USING INDUSTRIAL SLUDGE

Ann D. Patterson, Vacaville, Calif., and Wayne M. Kachel, Plainfield, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 15, 1985, Ser. No. 712,181
Int. Cl.[4] C10G *9/32, 17/00*
U.S. Cl. 208—127 9 Claims



1. In a fluid coking process comprising the steps of:
(a) contacting a carbonaceous chargestock having a Conradson carbon content of at least about 5 weight percent with hot fluidized solids in a fluidized coking bed containing a coking zone maintained in a fluidized state by the introduction of a fluidized gas to produce a vapor phase product and coke which deposits on said fluidized solids;
(b) introducing a portion of said solids with a coke deposit thereon into a heating zone to heat said portion of solids;
(c) recycling a first portion of heated solids from said heating zone to said coking zone;
(d) passing a second portion of said heated solids from said heating zone to an elutriation zone to separate larger particles from smaller particles of said solids;
(e) introducing a cooling agent into said elutriation zone to cool said larger solid particles;
(f) passing the vaporous effluent of said elutriation zone to said heating zone, said vaporous effluent comprising steam and said entrained smaller solid particles;
the improvement which comprises: said cooling agent comprising an aqueous sludge comprising an organic waste to produce steam and convert at least a portion of said organic waste to a vaporous organic compound, and passing said vaporous organic compound to said heating zone.

4,552,650

PROCESS FOR HYDROTREATING METAL CONTAINING OIL FRACTIONS USING A SUPPORTED CATALYST OF INCREASED RESISTANCE TO POISONS

Hervé Toulhoat, Le Pecq; Yves Jacquin, Sevre, and Thierry Dupin, Garges les Gonesses, all of France, assignors to Societe Francaise des Produits pour Catalyse Pro-Catalyse, Rueil-Malmaison, France

Division of Ser. No. 505,557, Jun. 17, 1983, Pat. No. 4,499,203. This application Jun. 5, 1984, Ser. No. 617,433
Claims priority, application France, Jun. 17, 1982, 82 10757
Int. Cl.[4] C10G *45/08*
U.S. Cl. 208—216 PP 29 Claims

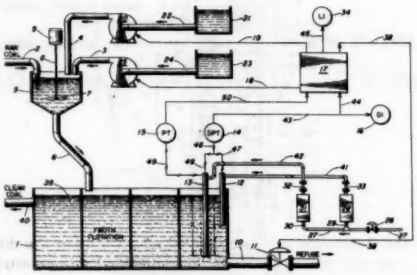
1. In a process for hydrotreating a hydrocarbon, wherein a hydrocarbon charge is contacted with hydrogen in the presence of a supported heterogeneous hydrotreatment catalyst, and wherein said process is subject to catalyst deactivation by pore mouth plugging,
the improvement wherein said catalyst comprises a carrier and at least one catalytic metal or compound of a catalytic metal, said metal or at least one of the metals being vanadium, molybdenum, tungsten, nickel, cobalt or iron, wherein said catalyst consists of a plurality of juxtaposed agglomerates each formed of a plurality of acicular platelets, the platelets of each agglomerate being oriented

generally radially with respect to one another and with respect to the center of the agglomerate; wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts.

4,552,651
CONTROL OF FROTH CELL PERFORMANCE THROUGH THE USE OF DIFFERENTIAL BUBBLER TUBES

Thomas D. Sandbrook, Eighty Four, and Roy O. Scandrol, Library, both of Pa., assignors to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 551,222, Nov. 14, 1983, abandoned. This application Feb. 1, 1984, Ser. No. 575,964
Int. Cl.⁴ B01J *4/00*
U.S. Cl. 209—1 **5 Claims**



1. A method of controlling the separation of coal from a coal and refuse pulp mixture in a froth flotation means comprising the steps of:

(a) providing a froth flotation means, and a differential bubbler tube means, said bubbler tube means comprising two tubes disposed to different levels into the pulp within said flotation means,

(b) passing gas through said differential bubbler tube means while measuring the differential back pressure of said tubes and also the back pressure of one of said tubes,

(c) producing a first control signal proportional to the ratio of said back pressure to said differential back pressure, and a second control signal proportional to said differential back pressure,

(d) feeding a mixture of coal and refuse pulp to said froth flotation means to form a coal froth product and a refuse output,

(e) controlling the flow rate of said refuse output from said froth flotation means in response to changes in said first control signal, and

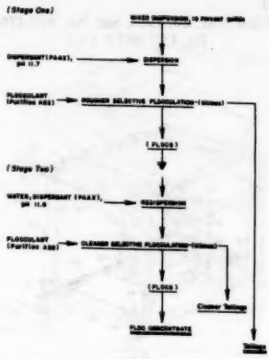
(f) controlling the rate of addition of a froth enhancement additive to said froth flotation means in response to changes in said second control signal.

4,552,652
METHOD FOR REMOVING INORGANIC SULFIDES FROM NON-SULFIDE MINERALS

Yosry A. Attia, Columbus, Ohio, and Douglas W. Fuerstenau, Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 17, 1983, Ser. No. 542,349
Int. Cl.⁴ B03B *1/00*
U.S. Cl. 209—5 **6 Claims**

1. The method as in claim 2 wherein the polymeric agent of the admixing has a molecular weight of from about 2,000 to about 20,000 and is a reaction product of carbon disulfide and a polymer selected from the group consisting of cellulose, methyl cellulose, sodium carboxymethyl cellulose, hydroxypropyl methyl cellulose, polyvinyl alcohol, polysaccharide,

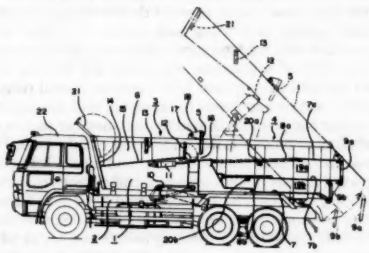


polyacrylic acid, methacrylic acid and salts thereof, and partially hydrolyzed acrylamide.

4,552,653
REAR DUMP TRUCK WITH SIEVING DEVICE

Shin Sumino, Sukaihaitsu Tokai 2310, 1-13 Tomiyacho, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Apr. 20, 1984, Ser. No. 602,472
Claims priority, application Japan, Apr. 22, 1983, 58-70144
Int. Cl.⁴ B07B *1/28*
U.S. Cl. 209—421 **9 Claims**



1. A rear dump truck comprising:

a tiltable load box including a floor, a front plate and a pair of side plates;

a partition dump door pivotably carried by said load box defining a gap between a lower edge portion thereof and the floor and dividing the box into a front section and a rear section, said partition dump door being lockable in a plurality of predetermined pivotal positions;

sieve means extended substantially horizontally at an intermediate height position within the box rear section;

a load chamber forming a part of the box below the sieve means;

rear dump door means attached to the load chamber; and

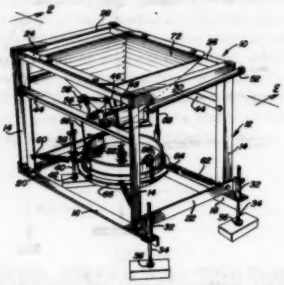
a stopper pivotably mounted on the floor of the front section at a position forward of the partition dump door in this box, locking means for locking said stopper in a predetermined pivotal position, the stopper being pivotable between a first position adjacent the floor of the box and a second, upright position relative to the floor of the box, the height of the stopper in the second position being lower than that of the side plates of the box.

4,552,654

SAMPLE CONCENTRATING CABLE JIG

William L. Mansker, 8704 Gutierrez NE., Albuquerque, N. Mex. 87111

Filed Mar. 30, 1984, Ser. No. 595,476
Int. Cl.[4] B03B *4/00*
U.S. Cl. 209—425 **7 Claims**



1. A sample concentrator jig including an open support frame for support in body of water with the level of the water disposed, generally, at a predetermined level on said frame, a mount, a generally horizontal sample support screen supported from said mount, said mount including portions thereof horizontally spaced apart about and outward of said support screen, a plurality of generally horizontal elongated coiled expansion springs extending between and having their opposite ends removably anchored to said mount portions and to corresponding peripherally spaced portions of said support frame with said springs in at least partially tensioned state and supporting said mount and screen from said frame, lift means connected between said frame and mount operative to intermittently direct and release upward thrusts on said mount, said expansion springs supporting said screen at a level at least slightly below said predetermined level, said lift means including a plurality of upstanding elongated and flexible tension member sections having their lower ends anchored relative to said mount portion and means for applying said upward thrusts on the upper end portions of said tension member sections, said tension member section lower ends being evenly spaced about a central area of said support screen, said means for applying said upward thrusts on said tension member sections including an operating shaft oscillatably supported from said frame and extending horizontally thereacross, said operating shaft including a radially outwardly projecting handle and a pair of radially outwardly projecting lever arms adjacent its opposite ends, a pair of pulley wheels journaled from opposite side portions of said frame, substantially vertically spaced above the tension member section lower ends, said tension member sections including mid-portions trained over said pulley wheels, the ends of said tension member sections remote from said mount being anchored relative to said lever arms.

4,552,655

SELF-CLEANING FILTER APPARATUS

Moshe Granot, Moshav Adanim, Israel

Filed Oct. 6, 1981, Ser. No. 309,094
Int. Cl.[4] B01D *19/02*
U.S. Cl. 210—108 **10 Claims**

1. Filter apparatus adapted to be connected to a supply line for a fluid to be filtered and to be operated according to either a filter mode or a self-cleaning mode, comprising:

a housing having a filter body therein;

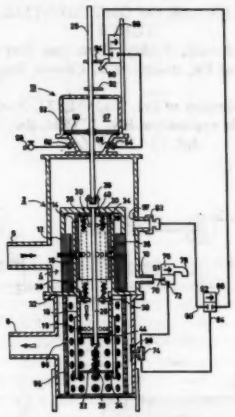
said housing including an inlet on the upstream side of the filter body, a clean fluid outlet on the downstream side of the filter body, and a dirty fluid outlet on the upstream side of the filter body;

said filter body including a plurality of filter elements which are adapted to be pressed together during the filtering mode of operation, and spread apart during the self-cleaning mode of operation;

a drive for moving the filter elements apart;

a first valve between the downstream side of the filter body and the clean fluid outlet;

a second valve between the upstream side of the filter body and the dirty fluid outlet;



and differential pressure control means sensing the difference in pressure between the upstream and downstream sides of the filter body, and effective, in response to sensing a differential pressure exceeding a predetermined value, to initiate a self-cleaning mode of operation by closing said first valve, opening said second valve, and actuating said drive to permit the filter elements of the filter body to move apart and to be cleaned by the fluid.

4,552,656

PURIFIED WATER STORAGE SYSTEM

Donald F. Solomon, Newport Beach, Calif., assignor to Wetco, Inc., Las Vegas, Nev.

Filed Sep. 23, 1983, Ser. No. 534,983
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—137 **16 Claims**

1. A purified water container system comprises

a container having rigid walls capable of holding a fluid under pressure,

a first chamber within said container,

a flexible impermeable bladder mounted within said first chamber,

walls means in the container for precluding expansion of the bladder beyond a predetermined volume,

a second chamber having a volume of at least 75% of the volume of the first chamber,

at least one passageway connecting said first chamber with said second chamber,

conduit means for passing purified water from a reverse osmosis purification unit into and out from the bladder under pressure to said bladder, and

supply means for providing a gas under pressure to said chambers, said system being constructed such that when the bladder is filled to the maximum capacity, a volume of pressurized gas approximately equal to at least 75% of the bladder volume exists in said second chamber to enable the maintenance of a substantial pressure drop across said reverse osmosis unit.

4,552,657

FILTER

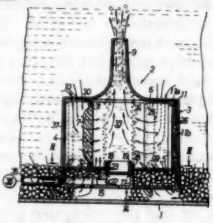
Yonekichi Ogawa, Tokyo, Japan, assignor to Suisaku Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,435

Claims priority, application Japan, Jan. 24, 1984, 59-11561

Int. Cl.⁴ B01D *35/02*

U.S. Cl. 210—169 **3 Claims**



1. A filter comprising a filter case the interior of which is divided by a separator into upper and lower filtration chambers, a compact filter material of a cylindrical shape disposed in said upper filtration chamber so as to define on both outer and inner sides thereof a non-purification chamber communicating with upper suction ports formed at the upper part of said filter case and a purification chamber communicating with a drain pipe disposed on the upper surface of said filter case and having a large capacity, and a coarse filter material housed in said lower filtration chamber and serving also as a weight, said lower filtration chamber communicating with said purification chamber through passage ports formed in said separator while communicating with lower suction ports formed in a bottom surface of said filter case, said purification chamber communicating with an air feed port connected to an air pump.

4,552,658

SPA WITH RECESSED FILTER CHAMBER

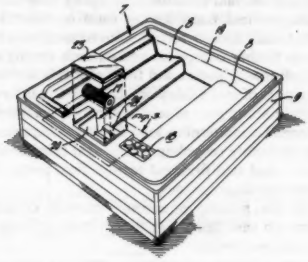
Carson D. Adcock, Huntington Valley, and Robert Lauter, Horsham, both of Pa., assignors to W. W. Adcock, Inc., Huntingdon Valley, Pa.

Filed Aug. 31, 1984, Ser. No. 645,870

Int. Cl.⁴ E04H *3/18*

U.S. Cl. 210—169 **4 Claims**

1. A spa with a water recirculation system, comprising a molded shell for the spa water having a filter cavity integrally molded with the shell below the water level and upwardly open for access from above the water level, the cavity being inwardly open to the interior of the shell to receive water therefrom and having a filter chamber in the lower portion thereof positioned to receive a filter in a horizontal position at a level below the water level in the shell and the filter chamber having a suction connection extended exteriorly of the shell, and a renewable filter positioned horizontally in said chamber to receive water flowing into the filter chamber from the



interior of the shell and delivering the filtered water to said suction connection.

4,552,659

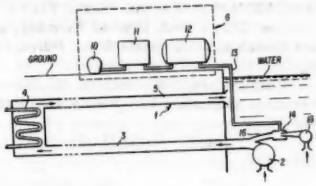
APPARATUS FOR ELIMINATION OF BIOFOULING

Norikazu Tabata; Shigeki Nakayama; Keisuke Namba, and Shiro Yamauchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,144, Mar. 4, 1980, abandoned. This application Mar. 29, 1984, Ser. No. 594,911

Int. Cl.⁴ C02F *1/78*

U.S. Cl. 210—177 **1 Claim**



1. Apparatus for the elimination of biofouling of a water system comprising:

an oxygen supply tank;

an oxygen pressure boost means;

a low-efficiency ozonizer;

a first heat exchanger means having a high temperature side and a low temperature side;

first, second, third and fourth motor operated valves;

a thermal conditioning recycling pump;

a second heat exchanger means having first, second third and fourth fluid ports;

a water ejector in communication with said water system;

a water ejector pump in communication with said water ejector; and

a single adsorption column, wherein said adsorption column further comprises an ozone adsorbent, a thermal conditioning jacket disposed around said adsorbent for heating and cooling said adsorbent, first and second thermal conditioning ports in communication with said jacket, and exactly three gas ports in communication with said adsorbent, said three gas ports further comprising a gas inlet and first and second gas outlets; wherein said apparatus further comprises

a closed gas-handling piping path comprising and extending uninterrupted from said first gas outlet of said adsorption column, through said first motor controlled valve, through said low temperature side of said first heat exchanger means, through said oxygen supply tank, through said oxygen pressure boost means, through said low-efficiency ozonizer, through said high temperature side of

said first heat exchanger means, through said second motor operated valve and to said gas inlet of said adsorption column;

a closed thermal conditioning piping loop for circulating a first thermal conditioning fluid to selectively heat and cool said adsorbent, wherein said thermal conditioning loop further comprises and extends through said thermal conditioning jacket and from said first thermal conditioning port of said adsorption column to said second thermal conditioning port of said adsorption column, wherein said thermal conditioning loop further comprises said thermal conditioning recycling pump, said third motor controlled valve and said first and second fluid ports of said second heat exchanger means;

means for passing a second thermal conditioning fluid through said third and fourth ports of said second heat exchanger means;

an ozone ejecting piping path extending uninterrupted from said second gas outlet of said adsorption column, through said fourth motor operated valve and thence to said water ejector;

wherein said water ejector and said water ejector pump further comprise means for selectively rapidly desorbing ozone from said adsorbent and injecting said ozone at high concentration into said water system; and

wherein said thermal conditioning loop further comprises means for heating said adsorbent during said desorbing and ejecting and means for cooling said adsorbent during operation of said ozonizer.

4,552,660

PLATE FILTER HAVING A MOVABLE FILTER CLOTH

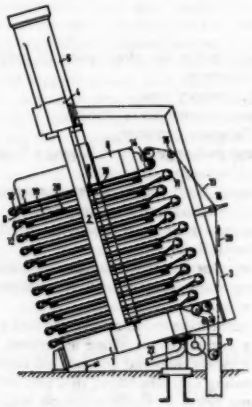
Alfons Schotten, Düren, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,286

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246771

Int. Cl.[4] B01D *25/12*

U.S. Cl. 210—225 **2 Claims**



1. A plate filter having a length, comprising

(a) a stand;

(b) a plurality of filter plates supported on said stand in a parallel orientation and being shiftable parallel to said length;

(c) means for shifting said filter plates towards one another;

(d) a first deflecting roll carried by each filter plate on first side thereof; each first deflecting roll having a roll axis; roll axes of consecutive first deflecting rolls, as viewed parallel to said length, lying alternatingly in a first plane and in a second plane spaced from one another;

(e) a second deflecting roll carried by each filter plate on a second side thereof;

(f) a filter cloth supported by said first and second deflecting rolls; said filter cloth being trained in succession alternatingly about said first and second deflecting rolls for guiding said filter cloth in a zigzag course between consecutive filter plates;

(g) a first sprocket affixed to each said first deflecting roll coaxially therewith for rotation with the first deflecting roll as a rigid unit; each said first sprocket having a diameter;

(h) a second sprocket mounted on each said first deflecting roll coaxially therewith for free idling rotation relative to the first deflecting roll; each said second sprocket having a diameter; the distance between said first and second planes being greater than the diameter of said first and second sprockets;

(i) a first elongated drive means being trained in a zigzag course in an alternating sequence about first and second sprockets of first deflecting rolls belonging to consecutive filter plates as viewed along said length; said first elongated drive means being in meshing relationship with the first and second sprockets about which said first elongated drive means is trained;

(j) a second elongated drive means being spaced from said first elongated drive means in a direction perpendicular to said length; said second elongated drive means being trained in a zigzag course in an alternating sequence about second and first sprockets of first deflecting rolls belonging to consecutive filter plates as viewed along said length; said second elongated drive means being in meshing relationship with the first and second sprockets about which said second elongated drive means is trained; the zigzag course of said first elongated drive means being parallel to the zigzag course of said second elongated drive means; the diameter of said first and second sprockets and the distance between said first and second planes being dimensioned for varying the magnitude of a looping angle represented by an arc along which the first and second elongated drive means are in engagement with respective first and second sprockets to compensate for length variations of said first and second elongated drive means upon shifting motion of said filter plates relative to one another; and

(k) means for driving said first elongated drive means in a first direction and said second elongated drive means in a second, opposite direction for rotating said first deflecting rolls to advance said filter cloth in said zigzag course thereof.

4,552,661

LIQUID FILTER HAVING SELF-RETAINING FILTER BAGS

Howard W. Morgan, P.O. Box 735, Michigan City, Ind. 46360

Continuation of Ser. No. 486,396, Apr. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 311,962, Oct. 16, 1981, abandoned. This application May 24, 1983, Ser. No. 497,426

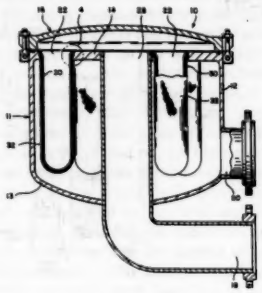
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.[4] B01D *29/30*

U.S. Cl. 210—232 **3 Claims**

1. In a liquid filter including a housing having an upper part defining at least one opening into the interior of said housing, a removable cover spanning said housing opening, inlet and outlet ports providing fluid communication with said housing interior through said housing opening, a filter bag having a reticulated sack part, said ring part including a flexible downturned lip having an angled side wall and terminating in an end edge, said housing upper part including a channel circumscribing said defined housing opening, the improvement wherein

said channel includes a base generally paralleling the plane of said housing opening and a side tapering upwardly and inwardly relative to the opening, said bag sack part extending through said housing opening and said bag ring part lip seated



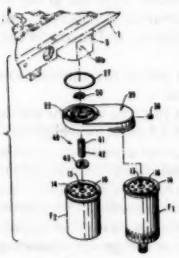
in said channel with the side wall of said lip being urged against the side of said channel and the end edge of said lip contacting the base of said channel to secure and seal said bag to said housing at said housing upper part.

4,552,662

INTEGRAL FUEL FILTER HEAD AND ADAPTER FOR MULTIPLE FUEL FILTER CANISTERS

Timothy P. Webster, Columbus; Ervin E. Bush, Westport, and Roger D. Sweetland, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 2, 1984, Ser. No. 626,937
Int. Cl.[4] B01D *29/24*
U.S. Cl. 210—232 **21 Claims**



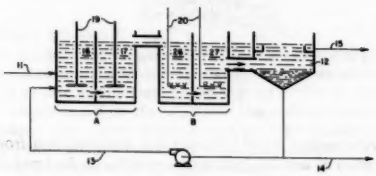
1. A liquid fuel operated engine having an integral fuel filter head formed unitarily on a part of the engine, said integral fuel filter head having a socket for matingly receiving a fuel filter canister and ports, in communication with fuel lines within said engine, for delivery of clean fuel to and receipt of dirty fuel from respective ones of said fuel lines, and a fuel filter adapter detachably secured to said integral fuel filter head, said fuel filter adapter having a body formed with a base mounting socket for matingly engaging the fuel filter socket of the integral fuel filter base and at least two filter sockets for matingly receiving a respective fuel filter canister, passages being formed in said body of the adapter for enabling dirty fuel to be fed from said engine through said base mounting socket, said filter sockets and filter canisters attached thereto, and cleaned fuel to be returned through said base socket to said engine.

4,552,663

PROCESS FOR THE REMOVAL OF AMMONIACAL NITROGEN IN THE BOD SORPTION ZONE OF A WASTEWATER TREATMENT PLANT

Marshall L. Spector, Allentown, and Sun-Nan Hong, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 31, 1984, Ser. No. 636,208
Int. Cl.[4] C02F *3/30*
U.S. Cl. 210—605 **6 Claims**



1. In a method for operating an activated sludge system to produce a sludge having rapid settling characteristics and containing an activated biomass species which method comprises:

(a) forming a mixed liquor in a BOD sorption zone, said mixed liquor being formed by mixing an activated biomass with a soluble BOD_5 and ammonia containing wastewater influent under conditions such that at least 25% of the soluble BOD_5 is sorbed by said biomass;

(b) oxidizing the BOD_5 in the mixed liquor, including at least part of the BOD_5 sorbed in said biomass, in an oxidation zone by contracting the mixed liquor with an oxidizing agent, said oxidizing being effective for oxidizing at least 30% of the total influent BOD_5 in the mixed liquor;

(c) settling the resulting oxidized mixed liquor in a settling zone thereby forming a supernatant liquor and a dense sludge containing activated biomass; and

(d) recycling at least a portion of the dense sludge to the BOD sorption zone;

the improvement for removing more than at least 2 ppm ammoniacal nitrogen in the BOD sorption zone such that said removed ammoniacal nitrogen does not reappear in the system as NOX or protein, said improvement comprising:

reducing the ammoniacal nitrogen concentration of the mixed liquor in the oxidation zone such that the ammoniacal nitrogen concentration in the mixed liquor leaving said zone is less than about 0.3 ppm and maintaining an overall F/M ratio equal to or greater than about 0.05.

4,552,664

METHOD AND APPARATUS FOR REMOVING IONS FROM A LIQUID

Philip E. Benner, 1739 Randolph Rd., Schenectady, N.Y. 12308

Filed May 9, 1984, Ser. No. 608,428
Int. Cl.[4] B03C *1/02*
U.S. Cl. 210—695 **12 Claims**

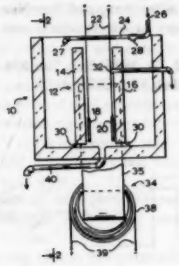
1. A method of removing ions from an ionizing liquid, comprising:

(a) establishing liquid flow in a predetermined direction;

(b) electrically charging the ions in a selected region of the flowing liquid;

(c) applying a magnetic field to said selected region and to the electrically-charged ions therein operative to move said electrically charged ions in the direction of liquid flow whereby the liquid remote in the direction of liquid flow from said selected region is of increased ion concentration;

(d) discharging liquid at a location remote in the direction of liquid flow from said selected region; and



(e) withdrawing liquid of lower ion concentration from a location of said selected region near the applied magnetic field.

4,552,665

STABILIZATION OF SOLUBLE MANGANESE AND ITS REACTION PRODUCTS

Paul H. Ralston, Bethel Park, and Sandra L. Whitney, McDonald, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed May 4, 1984, Ser. No. 607,027
Int. Cl.[4] C02F *5/10*
U.S. Cl. 210—697 **4 Claims**

1. A process for inhibiting the precipitation of dissolved manganese ion and its reaction products in aqueous solutions, comprising adding to an aqueous solution containing manganese ions 0.1 to 20 ppm of a copolymer of an unsaturated carboxylic compound selected from the group consisting of acrylic acid, methacrylic acid, their salts and mixtures thereof, and an unsaturated sulfonic compound selected from the group consisting of 2-acrylamido-2-methylpropylsulphonic acid, 2-methacrylamido-2-methylpropylsulphonic acid, their salts and mixtures thereof, wherein said copolymer has a weight average molecular weight of less than about 50,000, as determined by low angle laser light scattering and said carboxylic compound to sulfonic compound has a weight ratio of 1:20 to 20:1, to inhibit the precipitation of said manganese ions and disperse said reaction products.

2. The process of claim 1, wherein said copolymer is added in combination with a compound selected from the group consisting of water-soluble polycarboxylates, phosphonate and phosphates and the weight of said copolymer to said polycarboxylate, phosphonate, or phosphate is 1:50 to 50:1.

4,552,666

PROCESS FOR THE TREATMENT OF SEWAGE SLUDGE

Dietrich Müller, Handelmannweg 1, D-2000 Hamburg 52, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,712
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243827
Int. Cl.[4] C02F *11/12*
U.S. Cl. 210—710 **10 Claims**

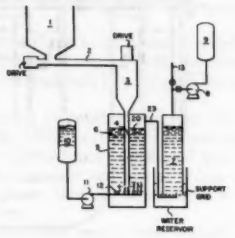
1. A process for the treatment of digested sewage sludge consisting essentially of mixing the sewage sludge with comminuted, dried autumn foliage until a deformable material is obtained, the proportions of autumn foliage to sewage sludge on a dry basis being from 0.3 to 0.6 parts of sewage sludge per part of comminuted autumn foliage and being such that the mixture is bound into a cohesive plastic material, a part of the water being removed from the sewage sludge either prior to the addition of the total autumn foliage, or after a partial addition thereof.

4,552,667

DESTRUCTION OF ORGANIC HAZARDOUS WASTES

Clifford G. Shultz, 1701 Glendale, Evansville, Ind. 47712

Filed Jun. 25, 1984, Ser. No. 624,368
Int. Cl.[4] C02F *1/70*; B01D *47/02*
U.S. Cl. 210—757 **14 Claims**



1. A process for treating hazardous wastes which contain hazardous organic compound containing covalently bound element selected from the group consisting of oxygen, nitrogen, sulfur and phosphorus, said process comprising the steps of introducing such compound below the surface of a bath comprising molten aluminum and reacting covalently bound oxygen, nitrogen, sulfur and phosphorus in said compound with molten aluminum in said bath to reduce such compound thereby destroying it and forming less hazardous product.

4,552,668

OXIDATION OF SULFIDES IN POLYMER-THICKENED AQUEOUS SOLUTION

Richard A. Brown, Trenton, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 30, 1984, Ser. No. 635,870
Int. Cl.[4] C02F *1/76*; C09K *3/00*
U.S. Cl. 210—759 **45 Claims**

41. A method for oxidizing a sulfide in a viscous, aqueous solution containing from 1 to 100 kg/m^3 of a hydratable polymeric material selected from the group consisting of polysaccharides, polysaccharide derivatives, polyacrylamides, polyacrylamide copolymers, and mixtures thereof comprising the steps of

a. adjusting the pH of the aqueous solution between pH 3 and pH 10, and

b. incorporating into the aqueous solution

i. from 0.05 to 0.5 parts by weight of a compound selected from the group consisting of aromatic hydroxy compounds, unsaturated compounds and allylic compounds,

ii. sufficient hydrogen peroxide to react with at least part of the sulfide present in the aqueous solution, and

iii. an effective amount of a transition metal activator selected from the group consisting of copper, iron, a coordination compound of copper or iron containing at least one single dentate ligand or a chelate of copper or iron containing at least one multidentate ligand.

4,552,669

PNEUMATIC HYDRO-PULSE FILTER SYSTEM AND METHOD OF OPERATION

Ron S. Sekellick, Prospect, Conn., assignor to Mott Metallurgical Corporation, Farmington, Conn.

Filed Apr. 18, 1983, Ser. No. 485,884
Int. Cl.[4] B01D *23/24*
U.S. Cl. 210—798 **32 Claims**

1. A repeatably rejuvenated filtration system comprising:

an elongated filter array comprising a plurality of open ended rigid tubular porous filter elements having relatively smooth interior wall surfaces forming interior axial bores;

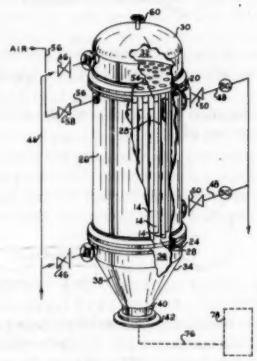
means for providing a flow stream of solid/fluid feed slurry to be filtered;

means for feeding the slurry into simultaneous operative engagement with the interior wall surface of each of said tubular filter elements at a sufficient pressure so that the fluid of the slurry passes outwardly through the walls of the tubular filter elements and the solids within the slurry are collected as a cake on the wall surfaces without substantial intrusion into the porous filter element;

means for selectively providing an increase in fluid pressure on the downstream side of said filter elements and for providing a brief pressure pulse of fluid radially inwardly through said walls of said porous filter elements into said axial bores to dislodge the collected cake from the interior wall surfaces and to provide a fluid bearing between said collected cake and said interior wall surfaces; and

means for subjecting the cake of solids to a rapid discharge fluid flow axially through the interior of the tubular element in the absence of filtration so that said fluid bearing coacts with said rapid axial fluid flow to flush the cake of solids axially along the interior of the tubular filter elements out an open end thereof.

18. A repeatably rejuvenating filtration process comprising the steps of:



(a) providing a flow stream of a solid/fluid feed slurry to be filtered;

(b) feeding the slurry into simultaneous operative engagement with a relatively smooth interior porous wall surface of each of a plurality of rigid tubular open ended filter elements at a sufficient pressure so that the fluid of the slurry passes outwardly through the walls of the tubular filter elements and the solids within the slurry are collected as a cake on the wall surfaces without substantial intrusion into the porous filter element;

(c) halting the flow of slurry to be filtered;

(d) selectively increasing filter pressure on the downstream side of the fluid element;

(e) subjecting the cake of solids to a brief fluid pressure pulse inwardly through the walls of the tubular filter elements sufficient to dislodge the cake of solids from the wall surfaces and provide a fluid bearing between the dislodged cake and the wall surfaces; and

(f) subjecting the cake of solids on the interior wall surfaces to a fluid flow axially through the interior of the tubular elements so that said fluid bearing coacts with said axial flow for removal of the cake of solids axially along the interior of the tubular filter elements and out the open ends thereof.

4,552,670
AMPHOTERIC WATER-IN-OIL SELF-INVERTING POLYMER EMULSION

Stanley A. Lipowski, Livingston, and John J. Miskel, Jr., Mendham, both of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 541,544, Dec. 1, 1983, Pat. No. 4,505,828, which is a division of Ser. No. 482,407, Apr. 6, 1983, Pat. No. 4,431,548, which is a division of Ser. No. 308,175, Oct. 5, 1981, Pat. No. 4,392,917, which is a division of Ser. No. 84,986, Oct. 15, 1979, Pat. No. 4,330,450. This application Feb. 22, 1985, Ser. No. 704,553

Int. Cl.[4] C09K *7/02*

U.S. Cl. 252—8.5 C **9 Claims**

1. In treatment of aqueous drilling muds for use in petroleum exploitation, the improvement which comprises adding to the mud an effective amount of from about 0.01% to about 1.0% by weight based on the weight of the drilling mud of an amphoteric water-in-oil self-inverting polymer emulsion having

(a) from about 10 to about 50 parts by weight of a polymer selected from the group consisting of

(1) a copolymer having from about 30 to about 99 parts by weight of a water soluble nonionic vinyl monomer and from about 1 to about 70 parts by weight of a water soluble amphoteric vinyl monomer, and

(2) a terpolymer having from about 30 to about 98 parts by weight of a water soluble nonionic vinyl monomer, from about 1 to about 35 parts by weight of a water soluble anionic vinyl monomer and from about 1 to about 35 parts by weight of a water soluble cationic vinyl monomer,

(b) from about 10 to about 50 parts by weight of water,

(c) from about 5 to about 50 parts by weight of a hydrophobic liquid,

(d) from about 2 to about 25 parts by weight of a water-in-oil emulsifying agent, and

(e) from about 1 to about 15 parts by weight of an inverting surfactant

to control viscosity of the mud during drilling.

4,552,671
SPIN FINISH COMPOSITIONS FOR POLYESTER AND POLYAMIDE YARNS

Osamu Ogiso; Hisao Yamamoto, both of Aichi, and Akira Suzuki, Anjo, all of Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Oct. 15, 1984, Ser. No. 661,147

Claims priority, application Japan, Jun. 4, 1984, 59-69684

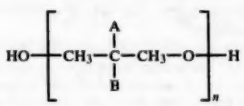
Int. Cl.[4] D06M *13/18, 13/50, 15/66*

U.S. Cl. 252—8.9 **1 Claim**

1. A spin finish composition adapted to be applied to polyester or polyamide yarns for ultra-high speed texturing with yarn speed 600 m/min or greater, said composition comprising

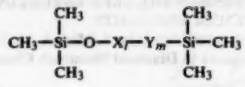
a base oil of polyether compounds which are ω-methoxypoly(oxyethylene/oxypropylene)ether derivatives synthesized from an alcohol shown by

(I)



(where A and B are independently alkyl group with 1 to 4 carbon atoms or hydroxy methyl group and n is 1 or 2), 1,2-propylene oxide and a methylator, the average molecular weight of said polyether compounds being 1500 to 6000 and the average weight ratio of oxyethylene/oxypropylene thereof being 5–50/95–50; and

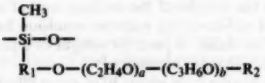
0.05 to 10 weight % of polyalkylene oxide modified polysiloxane of average molecular weight no less than 2500 shown by



(II)

(where X is

l is an integer in the range of 20 to 100; and Y is



wherein R_1 is alkylene group with 3 to 4 carbon atoms, R_2 is hydrogen, alkyl group with 1 to 8 carbon atoms or acyl group with 2 to 8 carbon atoms; a and b are integers satisfying the conditions $15 \leqq a+b \leqq 80$ and $2/8 \leqq b/a \leqq 8/2$; the polydimethyl siloxane part shown by X and the polyalkylene oxide modified siloxane part shown by Y may be repeated either by block repetition or by random repetition; and the repetition parts marked by a and b may be either by block repetition or by random repetition).

4,552,672

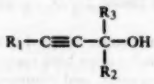
METHOD AND COMPOSITION FOR ACIDIZING SUBTERRANEAN FORMATIONS

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 21, 1984, Ser. No. 622,943
Int. Cl.[4] E21B *43/27*
U.S. Cl. 252—8.55 C **15 Claims**

1. A method of inhibiting the corrosivity of a corrosive acid employed in acidizing subterranean formations in contact with a metal at elevated temperatures which comprises adding to said corrosive acid an inhibiting effective amount of a stabilized corrosion inhibitor composition comprising:

at least one acetylenic alcohol having the general formula



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, alkyl, phenyl, substituted phenyl and hydroxy-alkyl radicals;

a quaternary aromatic ammonium compound;

an aromatic hydrocarbon compound which exhibits high oil-wetting characteristics;

an antimony compound capable of activation by the other constituents of said corrosion inhibitor composition whereby the corrosivity of said corrosive acid in contact with said ferrous metal is reduced, said antimony compound comprising at least one member selected from group consisting of antimony trioxide, antimony pentoxide, antimony trichloride, antimony pentachloride, alkali metal salts of pyroantimonate, antimony adducts of ethylene glycol and solutions containing ethylene glycol, water and the oxidized product of hydrogen peroxide at least one member selected from the group consisting of trivalent antimony compounds; and,

a stabilizer comprising at least one member selected from the group consisting of reactive fluoride-containing compounds, compounds having alpha-hydroxy or beta-hydroxy organic acid functional groups, or non-organic acid polyhydroxy compounds having from 3 to 9 carbon atoms, present in an amount effective for preventing substantial precipitation of said antimony compound from at least partially spent acid solutions containing said corrosion inhibitor.

4,552,673

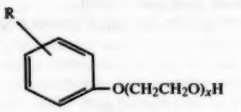
BLEND OF ALKYL PHENOL ETHOXYLATES AND ALKYL PHENOL GLYCOXYLATES AND THEIR USE AS SURFACTANTS

Marilyn A. Grolitzer, Hamden, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Oct. 24, 1983, Ser. No. 544,904
Int. Cl.[4] C11D *17/00*; C09K *3/00*
U.S. Cl. 252—8.55 D **13 Claims**

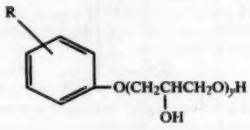
1. A surfactant composition comprising a blend of:

(a) at least one alkyl phenol ethoxylate selected from the group consisting of



wherein R is a branched or linear alkyl having from about 6 to about 18 carbon atoms and x is from about 4 to about 15; and

(b) at least one alkyl phenol glycoxylate selected from the group consisting of



wherein R' is a branched or linear alkyl having from about 6 to about 18 carbon atoms and y is from about 4 to about 15; and the weight ratio of (a) to (b) is from about 9:1 to about 1:2.

4,552,674

COMPOSITION AND METHOD FOR TREATING A SUBTERRANEAN FORMATION

Richard A. Brown, Trenton, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 19, 1983, Ser. No. 524,515
Int. Cl.[4] C09K *3/00*
U.S. Cl. 252—8.55 R **39 Claims**

1. An aqueous composition suitable for treating a subterranean formation comprising:

a. from 1 to 100 kilograms per cubic meter of a hydratable polymeric material selected from the group consisting of polysaccharides, polysaccharide derivatives, polyacrylamides, polyacrylamide copolymers, and mixtures thereof,

b. from 1 to 20 parts by weight of a peroxygen compound selected from the group consisting of hydrogen peroxide, tertiary butylhydroperoxide, potassium diperphosphate, ammonium and alkali metal salts of monopersulfuric acid, and ammonium and alkali metal salts of dipersulfuric acid per hundred parts by weight of said hydratable polymeric material, said peroxygen compound being capable of generating free radicals, thereby reducing the viscosity of said aqueous composition, and

c. a coordination compound of a ligand and a metal atom capable of existing in the solution in a first, or lower, oxidation state and a second, or higher, oxidation state, said coordination compound being present in sufficient quantity whereby 0.1 to 10 parts by weight of said metal atom is contained in said aqueous solution per 100 parts of said peroxygen compound.

4,552,675

COMPOSITION AND METHOD FOR TREATING A SUBTERRANEAN FORMATION

Richard A. Brown, Trenton, and Robert D. Norris, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 19, 1983, Ser. No. 524,680
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 252—8.55 R **42 Claims**

1. An aqueous composition suitable for treating a subterranean formation comprising:

a. from 1 to 100 kilograms per cubic meter of a hydratable polymeric material selected from the group consisting of polysaccharides, polysaccharide derivatives, polyacrylamides, polyacrylamide copolymers, and mixtures thereof,

b. from 1 to 20 parts by weight of a peroxygen compound selected from the group consisting of hydrogen peroxide, potassium dipersulfate, ammonium and alkali metal salts of monopersulfuric acid, ammonium and alcohol metal salts of dipersulfuric acid, tertiary butylhydroperoxide and mixtures thereof per hundred parts by weight of said hydratable polymeric material, said peroxygen compound being capable of generating free radicals, thereby reducing the viscosity of said aqueous composition, and

c. from 0.01 to 5 parts by weight of a free radical scavenger selected from the group consisting of unsaturated alcohols containing six or less carbon atoms, phenols, allylic monomers, and mixtures thereof per hundred parts by weight of the peroxygen compound in the aqueous composition.

4,552,676

COMPOSITION AND METHOD FOR LUBRICATING INSULATED ELECTRICAL CONDUCTORS

Henry F. Norris, 1506 Main St., Whiteford, Md. 21160

Filed Sep. 29, 1982, Ser. No. 428,191
Int. Cl.⁴ C10M *7/48, 7/52*
U.S. Cl. 252—20 **4 Claims**

1. A lubricating composition for installing an insulated electrical conductor in a conduit wherein: the ingredients are present in the following weight percentages:

powdered drying agent which is micron-mesh silica	0.1 to 1%;
powdered surfactant which is a salt of a fatty acid	2 to 6%;

and the difference from 100% being powdered lubricant which is talc.

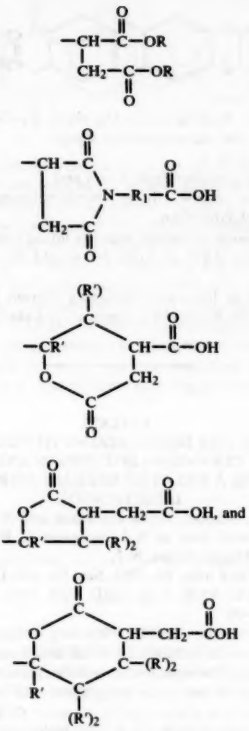
4,552,677

COPPER SALTS OF SUCCINIC ANHYDRIDE DERIVATIVES

Thomas R. Hopkins, Chesterland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jan. 16, 1984, Ser. No. 571,247
Int. Cl.⁴ C10M *1/54*
U.S. Cl. 252—33.6 **7 Claims**

1. A composition comprising a copper salt of a substituted succinic anhydride derivative containing at least one free carboxylic acid group; wherein said substituted succinic anhydride derivative contains a succinic anhydride derivative group selected from the group consisting of:



wherein each R is independently hydrogen or a hydrocarbon-based group containing up to about 18 carbon atoms, with the proviso that at least one R is hydrogen, R_1 is a lower alkyl radical, and, each R′ is independently hydrogen or a hydrocarbon-based group containing up to 27 carbon atoms; and wherein said substituted succinic anhydride derivative contains a substituent group which is a hydrocarbon-based group with the proviso that the total number of carbon atoms in said substituent group and said R′ groups is no more than 35.

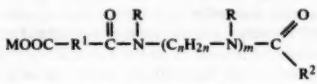
4,552,678

CORROSION INHIBITORS FOR AQUEOUS LIQUIDS FOR THE WORKING OF METALS, AND A PROCESS FOR THEIR PREPARATION

Francesco Cargnino; Giuseppe Natoli, and Horst Lorke, all of Hoechst Aktiengesellschaft, P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,362
Claims priority, application Italy, Oct. 25, 1982, 23902 A/82
Int. Cl.⁴ C10M *3/30*
U.S. Cl. 252—49.3 **5 Claims**

1. A compound of the general formula

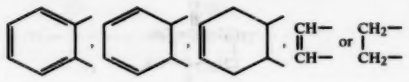


(I)

in which

R denotes hydrogen or hydroxymethyl,

R^1 denotes a group of the formulae



R^2 denotes hydrogen, C_1–C_{12}-alkyl, C_1–C_5-hydroxyalkyl, phenyl, tert.-butylphenyl or styryl,

n denotes 2 or 3,

m denotes a number from 1 to 4 and

M denotes mono-, di- or tri-ethanolammonium or isopropanolammonium.

4. A corrosion-inhibiting aqueous liquid containing therein between about 0.5% or 5.0% by weight of a compound of claim 1.

5. A cooling lubricant containing therein between about 0.5% and 5.0% weight of a compound of claim 1.

4,552,679

METHOD FOR DEODORIZING HYPOCHLORITE DENTURE CLEANSING SOLUTIONS AND PRODUCT CONTAINING A DELAYED RELEASE HYPOCHLORITE DEACTIVATOR

Alexander M. Schobel, North Plainfield, and Robert W. Schumacher, Kenvil, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 16, 1984, Ser. No. 590,129

Int. Cl.[4] A61K *7/30;* **C11D** *7/54, 7/60, 17/00*

U.S. Cl. 252—90 **20 Claims**

1. An effervescent denture cleansing composition having two separate parts, comprising a fast dissolving effervescent first part having incorporated therein a cleansing agent comprising a hypochlorite generating agent and an effervescent second part slower disintegrating in water than the first part having incorporated therein a hypochlorite deactivator.

3. The composition according to claim 1 wherein the hypochlorite deactivator is an alkali metal perborate, alkali metal nitrite, or ascorbic acid.

4,552,680

HYPOCHLORITE BLEACH CONTAINING SURFACTANT AND ORGANIC ANTIFOAMANT

William L. Hartman; David A. O'Brien, both of Cincinnati, and Thomas H. Taylor, Middletown, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,528

Int. Cl.[4] C11D *7/26, 7/54*

U.S. Cl. 252—102 **5 Claims**

1. A method of reducing foam in a process for fast line bottling and packing of a fragranced aqueous bleach composition from about 2% to about 16% by weight alkali metal hypochlorite compound and from about 0.05% to about 3.0% by weight hypochlorite stable surfactant, said method comprising adding to said composition a hypochlorite stable organic antifoamant at a level of from about 0.005% at about 1% by weight of said composition and wherein said organic antifoamant is present at a level in said composition which reduces foam at least 25% versus a comparable composition free of said organic antifoamant according to the Foam Reduction Test; and wherein when said hypochlorite stable surfactant is an amine oxide said level of organic antifoamant is at least 0.05% by weight of said composition, wherein said antifoamant material provides sufficient reduction of foam to facilitate faster packing line speeds in the bottling of said bleach.

4,552,681

GRANULAR, FREE-FLOWING DETERGENT COMPONENT AND METHOD FOR ITS PRODUCTION

Otto Koch, Leichlingen; Herbert Reuter, Hilden, and Wolfgang Seiter, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 541,569, Oct. 13, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 678,385

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344698

Int. Cl.[4] C11D *3/075, 3/12, 11/02, 17/06*

U.S. Cl. 252—140 **38 Claims**

1. A method for preparing a granular, freeflowing detergent component which dissolves rapidly in water, which has a powder density of from about 550 to 800 gm/l, more than 50% by weight of which comprises droplet-like to rodlet-like particles having an average diameter of from about 0.02 to 1.5 mm, an average length of from about 0.1 to 5 mm, and a ratio of average diameter to average length of from about 1:1.2 to 1:10, which method comprises spraying an aqueous suspension of synthetic, essentially nonionic surfactants, inorganic supports, additional organic washing aids, and water bound by adsorption and in hydrate form, the suspension containing from about 35 to 55% by weight of water, through nozzles having an orifice diameter of from about 3 to 5.5 m into a spray-drying tower under a pressure of from 16 to 30 bars and at a temperature equal to or less than about 250° C., the ratio of the pressure at the nozzle entrance to the nozzle orifice diameter being from about 3 to 9 bars/mm, wherein the product, as recovered from the spray-drying step, contains about 15 to 28% by weight of alkoxylated surfactant(s).

11. The method of claim 1, wherein said inorganic supports include an anhydrous sodium tripolyphosphate having a content of from 30 to 50% of the I-type modification.

4,552,682

PEROXIDE COMPOSITION CONTAINING PHENOLIC ANTIOXIDANT

Donald J. Black, Akron, and Robert H. Tang, Norton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 430,058

Int. Cl.[4] C01B *13/00, 15/00;* **C09K** *3/00*

U.S. Cl. 252—186.26 **17 Claims**

1. A peroxide composition consisting essentially of:

a. from about 10 to about 65 weight percent organic peroxide dispersed in an aqueous medium containing sufficient surfactant to provide a stable dispersion, and

b. an amount of phenolic antioxidant sufficient to reduce the rate of self induced homolytic decomposition of the organic peroxide at temperatures of from 0° C. to +5° C.

4,552,683
GAS DESULFURIZATION REACTANT

Byron E. Powell, Rolling Meadows; Virendar S. Bakhshi, Chicago, and Donald A. Randolph, Wheaton, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 426,445, Sep. 29, 1982, Pat. No. 4,424,197. This application Sep. 14, 1983, Ser. No. 532,086
Int. Cl.[4] C09K *3/00;* **B01J** *8/00;* **C01B** *17/00*
U.S. Cl. 252—189 **8 Claims**

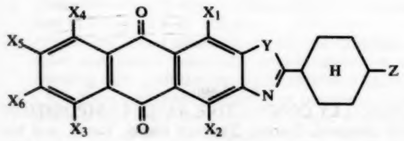
1. A reactant for flue gas desulfurization comprising calcium oxide particles of bulk density less than 1 gram per cc, total pore volume of at least about 0.4 cubic centimeters per gram, total pore area of at least 1 square meter per gram, median pore diameter by surface area of less than 2 micrometers, median pore diameter by pore volume of at least 0.8 micrometers and apparent skeletal density of at least about 2.7.

4,552,684
DICHROIC DYE AND LIQUID CRYSTALLINE COMPOSITION FOR COLOR DISPLAY

Yasuyuki Yamada; Tsutomu Nishizawa, both of Yokohama; Tamio Mikoda; Tooru Miyahara, both of Ohmuta, and Masaharu Kikutsugi, Mihashi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

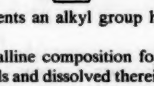
Filed Mar. 7, 1984, Ser. No. 586,981
Claims priority, application Japan, Mar. 8, 1983, 58-36613
Int. Cl.[4] G02F *1/13;* **C09K** *3/34;* **C09B** *5/24*
U.S. Cl. 252—299.1 **2 Claims**

1. A dichroic anthraquinonic dye represented by the following structural formula



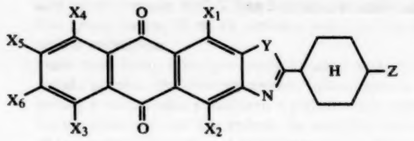
(I)

where X_1 represents a hydroxyl group, an amino group or a methylamino group; each of X_2, X_3 and X_4 represents a hydrogen atom, a halogen atom, a hydroxyl group, an amino group or a methylamino group; each of X_5 and X_6 represents a hydrogen atom, a straight or branched alkyl group having 1 to 4 carbon atoms or $—COOR_1$ in which R_1 represents an alkyl group having 1 to 4 carbon atoms; Y represents an oxygen or sulfur atom; and Z represents an alkyl group having 4 to 10 carbon atoms, $—COOR_2$ in which R_2 represents a straight or branched alky group having 4 to 10 carbon atoms, $—OOCR_2$ in which R_2 has the same meaning described above, $—C_2H_4OR_1$ in which R_1 has the same meaning described above, or



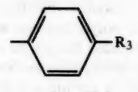
in which R_3 represents an alkyl group having 1 to 4 carbon atoms.

2. A liquid crystalline composition for color display comprising liquid crystals and dissolved therein a dichroic dye, said dichroic dye being at least one dichroic anthraquinonic dye represented by the structural formula



(I)

wherein X_1 represents a hydroxyl group, an amino group or a methylamino group; each of X_2, X_3 and X_4 represents a hydrogen atom, a halogen atom, a hydroxyl group, an amino group or a methylamino group; each of X_5 and X_6 represents a hydrogen atom, a straight or branched alkyl group having 1 to 4 carbon atoms or $—COOR_1$ in which R_1 represents an alkyl group having 1 to 4 carbon atoms; Y represents an oxygen or sulfur atom; and Z represents an alkyl group having 4 to 10 carbon atoms, $—COOR_2$ in which R_2 represents a straight or branched alkyl group having 4 to 10 carbon atoms, $—OOCR_2$ in which R_2 has the same meaning described above, $—C_2H_4OR_1$ in which R_1 has the same meaning described above, or



in which R_3 represents an alkyl group having 1 to 4 carbon atoms.

4,552,685
THICKENED AMPHOTERIC SURFACTANT SOLUTIONS

John M. Kernstock; Earl H. Johnson, and Bertha R. Vaughn, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 63,280, Aug. 2, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,028
Int. Cl.[4] B01F *17/00*
U.S. Cl. 252—355 **18 Claims**

1. A thickened, amphoteric surfactant composition comprising an aqueous solution of a water-soluble amphoteric surfactant thickened with a pH responsive, synthetic addition copolymer which is insoluble in an aqueous liquid at a pH of less than about 2, said composition being at a pH and containing an amount of the pH responsive copolymer sufficient to increase the viscosity of the amphoteric surfactant composition without substantially reducing the clarity thereof.

4,552,686
CORROSION INHIBITING COMPOSITION AND METHOD

Betty J. Morris-Sherwood, and Edward C. Brink, Jr., both of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,992
Int. Cl.[4] C09K *3/00*
U.S. Cl. 252—392 **13 Claims**

1. An inorganic nitrite free composition which is noncorroding to metals in contact therewith comprising water, an effective amount of a glycol selected from the group consisting of an alkylene glycol, a polyoxyalkylene glycol, and mixtures thereof, and an effective amount of a polyoxyalkylene amine of the formula:

$$CH_3(OCH_2CH_2)_x(OCH_2\underset{\displaystyle CH_3}{\underset{|}{C}}H_2)_yNH_2$$

wherein x is a number between about 18 and 19, and y is a number between about 2 and 3.

4,552,687

ELECTRICALLY CONDUCTIVE PLASTICS AND PRODUCTION OF SAME

Harry H. Beacham, Langhorne, Pa., and Paul R. Mucenieks, Lawrenceville, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 8, 1983, Ser. No. 512,286
Int. Cl.[4] H01B *1/00*
U.S. Cl. 252—500 9 Claims

1. A polymer composition having antistatic properties comprising a thermoplastic polymer having incorporated therein an effective amount of a liquid mixture of trialkylphosphine oxides wherein each of the alkyls contain from 4 to 18 carbon atoms.

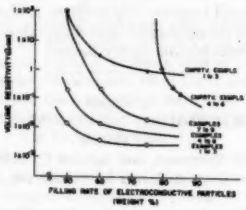
9. A polymer composition having antistatic properties comprising a thermoplastic polymer selected from the group consisting of polyethylene, polypropylene and polystyrene, said polymer having incorporated therein an effective amount of a liquid mixture of trialkylphosphine oxides wherein each of the alkyls contain from 4 to 18 carbon atoms.

4,552,688

ELECTROCONDUCTIVE SILICONE ELASTOMER COMPOSITIONS

Ryuji Sakamoto, Ohta, and Taro Yamazaki, Yokohama, both of Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,255
Claims priority, application Japan, Apr. 27, 1983, 58-74827
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—511 8 Claims



1. An electroconductive silicone elastomer composition comprising:

(A) 100 parts by weight of a polydiorganosiloxane having an average degree of polymerization of 500 to 12,000, wherein each polymer molecule contains at least two vinyl groups bonded to silicon atoms;

(B) 100 to 500 parts by weight of nickel-coated carbon;

(C) 0.1 to 5 parts by weight of a polyorganohydrogensiloxane, and

(D) 0.2 to 300 ppm based on the total amount of (A), (B) and (C) of platinum metal or platinum compound as platinum atom.

4,552,689

ELECTRICALLY CONDUCTIVE INORGANIC FILLER CONTAINING PROPYLENE POLYMER COMPOSITIONS

Hiroshi Yui; Yoshihiro Sobajima; Osamu Higashide; Tsuyoshi Imamura; Michiya Okamura, and Satoru Hattori, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 418,963, Sep. 16, 1982, Pat. No. 4,504,617.
This application Oct. 24, 1984, Ser. No. 664,172
Claims priority, application Japan, Sep. 16, 1981, 56-145974; Dec. 22, 1981, 56-207626
Int. Cl.[4] C08K *3/26, 3/04;* H01B *1/06*
U.S. Cl. 252—511 4 Claims

1. An electrically conductive composition comprising 2 to 100 parts by weight of electrically conductive carbon black to 100 parts by weight of a composition which comprises 25 to 90% by weight of component (A) and 75 to 10% by weight of component (B):

(A) at least one member selected from the group consisting of

(a) a crystalline propylene copolymer composed of propylene and one or more other α-olefins;

(b) a composition prepared by blending the copolymer (a) with a synthetic rubber and/or crystalline polypropylene with a synthetic rubber, and

(c) a composition prepared by blending a crystalline polypropylene with a synthetic rubber, wherein

(1) the amount of xylene extractable soluble component at 23° C. is 10 to 50% by weight, and

(2) the propylene content in the extractable soluble component is 30% by weight or more,

(B) an inorganic filler having an average particle size of 200μ or less, measured by light transmission in a liquid-phase sedimentation system.

4,552,690

ELECTRICALLY CONDUCTIVE RESIN COMPOSITION

Nobuyuki Ikeguchi, Ibaraki; Yasunari Osaki, Tokyo, and Yoshiyuki Furuya, Kanagawa, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,398
Claims priority, application Japan, Jun. 23, 1983, 58-113489
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—512 8 Claims

1. An electrically conductive resin composition comprising 15–35 parts by weight of a cyanate ester compound which is a monomer, polymer thereof or mixture of monomer and polymer, wherein said monomer has the formula

$$R—O—C{\equiv}N)_m$$

wherein m is an integer of 2–10 and R is an aromatic organic group, the cyanate groups being bonded to said aromatic organic group, and

65–85 parts by weight of an electrically conductive powder selected from the group consisting of a copper powder, a copper alloy powder, and a silver powder and mixtures thereof,

the cyanate ester component content in the cyanate ester compound being more than 50% by weight in terms of monomer, and

said composition further containing 0.5–15 parts by weight of at least one acetylacetone compound selected from the group consisting of acetylacetone, acetylacetone-ethylene diamine and acetylacetoneamine.

4,552,691

ELECTRICALLY CONDUCTIVE PASTES

Takashi Shoji, and Kenji Ochiai, both of Saitama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 638,936
Int. Cl.[4] H01B 1/06
U.S. Cl. 252—514 13 Claims

1. An electrically conductive paste comprising (i) 60 to 90 wt % of metal fine powders which comprise a silver fine powder having a particle size of 10 μm or less and a composite fine powder of silver and copper having a particle size of 10 μm or less, the copper content in the metal fine powders being 0.1 to 10 wt %, and (ii) 10 to 40 wt % of a vehicle component.

4,552,692

CONCENTRATED COMPOSITION FOR CLEANING RUGS AND CARPETS

Thomas W. Gillespie, 16528 Foothill Dr., Tampa, Fla. 33624

Continuation of Ser. No. 337,924, Jan. 8, 1982, abandoned, which is a continuation of Ser. No. 125,134, Feb. 27, 1980, abandoned. This application Feb. 21, 1984, Ser. No. 618,751
Int. Cl.[4] C11D 3/065, 1/22
U.S. Cl. 252—528 1 Claim

1. A concentrated composition for use in cleaning rugs and carpets comprising an effective amount of each of:

a. a first detergent soluble in water, said first detergent being selected from the group consisting of sodium alkylnaphthalene and sodium lauryl sulfate wherein said first detergent is used in a concentration of 3% to 7% by volume;

b. a second detergent milder than said first detergent, said second detergent being selected from the group consisting of a sodium C_{14}–C_{16} olefin sulfate and a lower alkyl benzene sulfonate wherein said second detergent is used in a concentration of 4% to 8% by volume;

c. an anti-foam agent selected from the group consisting of cocoamide and lauramide wherein said anti-foam agent is used in a concentration of 1% to 3% by volume;

d. a water softener selected from the group consisting of tetrapotassium pyrophosphate and tetrasodium pyrophosphate wherein said water softener is used in a concentration of 8% to 12% by volume;

e. at least one lower alkanol in an amount sufficient to dissolve and loosen potentially sticky substances such as chewing gum, pancake syrup and chocolate sauce;

f. a low foam surfactant consisting of non-ionic polyglycol wherein said low foam surfactant is used in a concentration of 2% to 10% by volume;

g. an optical brightener wherein said optical brightener is used in a concentration of 0.05% to 0.2% by volume;

h. at least one thickening agent wherein said thickening agent is used in a concentration of 0.05% to 0.2% by volume;

i. at least one electrostatic conductant selected form the group consisting of aminoethylacrylate-phosphate, oblique acrylate copolymer and alkyl dimethylbenzyl ammonium chloride wherein said electrostatic conductant is used in a concentration of 0.5% to 1.5% by volume;

j. tannin in a concentration of 2% to 6% by volume; and

k. water in an amount sufficient to make a total volume of 1 gallon of the concentrated composition.

4,552,693

TRANSPARENT FRAGRANCE EMITTING ARTICLES

Zahera J. Hussain, Wyckoff, N.J., and Ronald D. Zukoski, Warwick, N.Y., assignors to Avon Products, Inc., New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,501
Int. Cl.[4] A61K 7/46; C11B 9/00
U.S. Cl. 252—522 A 17 Claims

1. A composition for forming a solid transparent fragrance-emitting article comprising an admixture of

(a) 60 to 65 weight percent of a thermoplastic polyamide resin, having an average molecular weight of 5,000 to 15,000 which is formed by reaction of a polycarboxylic acid of the formula R(COOH)x wherein R is a hydrocarbon group having 20 to 44 carbon s and x is 2 or more, with a polyamine;

(b) said resin being homogeneously blended with 20 to 30 weight percent of a clear plasticizer/solvent system comprising a sulfonamide plasticizer, a gellant and a cosolvent for the plasticizer and the gellant, the solubility parameter of the polyamide resin and plasticizer system being compatible; and

(c) up to 15 weight percent of a fragrance oil,

said composition being clear, homogeneous, and fluid at a temperature below 120° C.

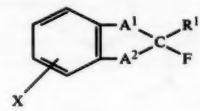
4,552,694

FLUORINATED BENZODIAZEPINS

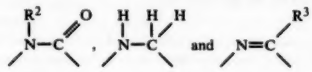
Nobuo Ishikawa, Yokohama, and Akio Takaoka, Kawasaki, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Jul. 30, 1984, Ser. No. 635,681
Claims priority, application Japan, Jul. 30, 1983, 58-140118
Int. Cl.[4] C07D 243/12
U.S. Cl. 260—239 BD 4 Claims

1. A fluorinated benzodiazepin of the formula



wherein A^1 and A^2 are the same or different groups, each expressed by one of the following formulas



R^2 being a hydrogen atom or a group having up to 10 carbon atoms selected from the group consisting of alkyl, alkenyl, fluorine-substituted alkyl, fluorine-substituted alkenyl, aminoalkyl, N,N-dialkylaminoalkyl and alkylsulfonylalkyl, and R^3 being a hydrogen atom or a group having up to 10 carbon atoms selected from the group consisting of alkyl, alkenyl, phenyl, halogen-substituted alkyl, halogen-substituted alkenyl and halogen-substituted phenyl, while R^1 is a hydrogen atom, phenyl, fluorine-substituted phenyl or a group having up to 5 carbon atoms selected from the group consisting of alkyl, alkenyl fluorine-substituted alkyl and fluorine-substituted alkenyl, and X is a hydrogen atom, halogen atom, nitro group or a group having up to 5 carbon atoms selected from the group consisting fo alkyl, alkenyl or fluorine-substituted alkyl and fluorine-substituted alkenyl.

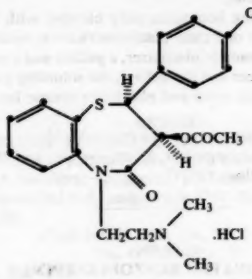
4,552,695

PROCESS FOR PRODUCTION OF DILTIAZEM HYDROCHLORIDE

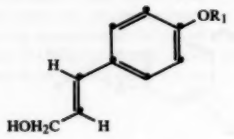
Kikuo Igarashi, Hyogo, and Tsunetoshi Honma, Nara, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Apr. 16, 1984, Ser. No. 600,405
Claims priority, application Japan, Apr. 21, 1983, 58-71138; Apr. 21, 1983, 58-71139; Apr. 21, 1983, 58-71140
Int. Cl.[4] C07D 281/02
U.S. Cl. 260—239.3 B 1 Claim

1. A process for production of diltiazem hydrochloride of the formula (I):

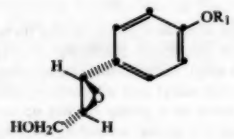

(1)

which comprises asymmetrical epoxidation of cinnamyl alcohol of the formula (2):


(2)

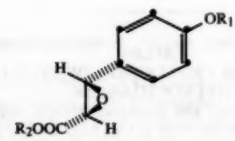
wherein R_1 is acyl

into an optically active epoxy alcohol having the absolute configuration of the formula (3):


(3)

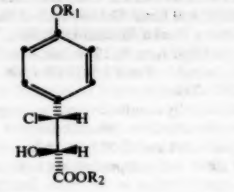
wherein R_1 has the same meaning as defined above,

oxidizing said epoxy alcohol (3) to the corresponding carboxylic acid, esterifying the latter to a carboxylic ester of the formula (4):


(4)

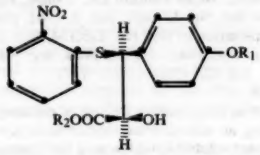
wherein R_1 has the same meaning as defined above and R_2 is a lower alkyl,

subjecting the latter (4) to hydrogen chloride addition to give a chlorohydrin having the absolute configuration of the formula (5):


(5)

wherein R_1 and R_2 each has the same meaning as defined above,

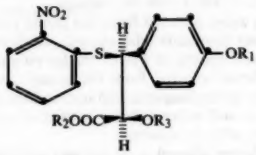
reacting the latter (5) with o-nitrothiophenol to give a thioether of the formula (6):


(6)

wherein R_1 and R_2 each has the same meaning as defined above,

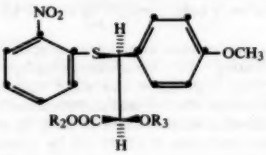
wherein R_1 and R_2 each has the same meaning as defined above,

subjecting the latter (6) to hydroxy protection to give a hydroxy-protected derivative of the formula (7):


(7)

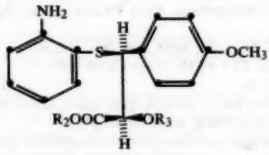
wherein R_1 and R_2 each has the same meaning as defined above and R_3 is alkoxymethyl, tetrahydrofuranyl, tetrahydropyranyl or benzyl,

deacylating and then methylating the latter (7) into a methoxy derivative of the formula (8):


(8)

wherein R_2 and R_3 each has the same meaning as defined above,

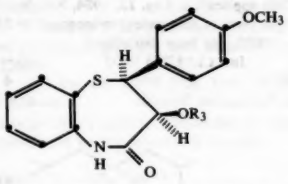
reducing the latter (8) into an aminophenylthio derivative of the formula (9):


(9)

-continued

wherein R_2 and R_3 each has the same meaning as defined above,

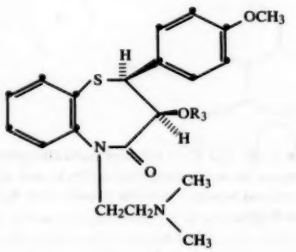
cyclizing the latter (9) to give a benzothiazepine derivative of the formula (10):



(10)

wherein R_3 has the same meaning as defined above,

to give an N-dimethylaminoethyl derivative of the formula (11):



(11)

wherein R_3 has the same meaning as defined above,

and then acetylating the final intermediate (11) in the presence of an acid catalyst under an anhydrous condition, if required followed by treatment with hydrogen chloride.

4,552,696

CARBAPENEM ANTIBIOTICS

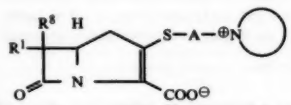
Choung U. Kim, Manlius, and Peter F. Misco, Jr., Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 366,910, Apr. 9, 1982, abandoned. This application Mar. 8, 1983, Ser. No. 471,379

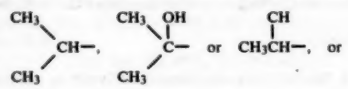
Int. Cl.[4] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 260—245.2 T **5 Claims**

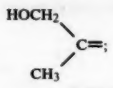
1. A compound of the formula



wherein R^8 is hydrogen and R^1 is hydrogen, CH_3CH_2—,

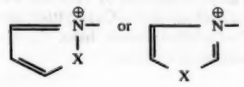


R^1 and R^8 taken together represent



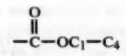
A is cyclopentylene, cyclohexylene or C_2–C_6 alkylene optionally substituted by one or more C_1–C_4 alkyl groups; and

represents a radical selected from

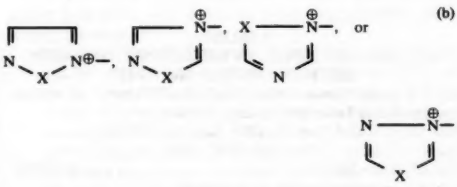


(a)

wherein X is O, S or NR in which R is C_1–C_4 alkyl or phenyl, said radical being optionally substituted on a carbon atom by one or more substituents independently selected from C_1–C_4 alkyl; C_1–C_4 alkyl substituted by hydroxy; amino, carboxy or halogen; C_3–C_6 cycloalkyl; C_1–C_4 alkoxy; C_1–C_4 alkylthio; amino; C_1–C_4 alkylamino; di(C_1–C_4 alkyl)amino; halo; C_1–C_4 alkanoylamino; C_1–C_4 alkanoyloxy; carboxy;

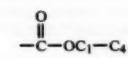


alkyl; hydroxy; amidino; guanidino, trifluoromethyl; phenyl; phenyl substituted by one, two or three amino, halo, hydroxyl, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups; and heteroaryl or heteroaralkyl in which the hetero atom or atoms in the above-named heterocyclic moieties are selected from the group consisting of 1–4 oxygen, nitrogen or sulfur atoms and the alkyl moiety associated with said heteroaralkyl moiety has 1–6 carbon atoms;



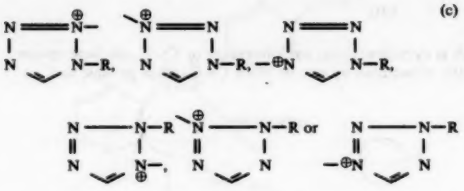
(b)

wherein X is O, S or NR in which R is C_1–C_4 alkyl or phenyl, said radical being optionally substituted on a carbon atom by one or more substituents independently selected from C_1–C_4 alkyl; C_1–C_4 alkyl substituted by hydroxy; amino, carboxy or halogen; C_3–C_6 cycloalkyl; C_1–C_4 alkoxy; C_1–C_4 alkylthio; amino; C_1–C_4 alkylamino; di(C_1–C_4 alkyl)amino; halo; C_1–C_4 alkanoylamino; C_1–C_4 alkanoyloxy; carboxy;



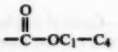
alkyl; hydroxy; amidino; guanidino, trifluoromethyl; phenyl; phenyl substituted by one, two or three amino, halo, hydroxyl, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups; and heteroaryl or heteroaralkyl in which the hetero atom or atoms in the above-named heterocyclic moieties are selected from the

group consisting of 1–4 oxygen, nitrogen or sulfur atoms and the alkyl moiety associated with said heteroaralkyl moiety has 1–6 carbon atoms; and



(c)

wherein R is C_1–C_4 alkyl or phenyl, said radical being optionally substituted on the carbon atom by a substituent selected from C_1–C_4 alkyl; C_1–C_4 alkyl substituted by hydroxy, amino, carboxy or halogen; C_3–C_6 cycloalkyl; C_1–C_4 alkylthio; amino; C_1–C_4 alkylamino; di(C_1–C_4 alkyl)amino; halo; C_1–C_4 alkanoylamino; C_1–C_4 alkanoyloxy; carboxy;



alkyl; hydroxy; amidino; guanidino; trifluoromethyl; phenyl; phenyl substituted by one, two or three amino, halo, hydroxyl, trifluoromethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups; and heteroaryl or heteroaralkyl in which the hetero atom or atoms in the above-named heterocyclic moieties are selected from the group consisting of 1–4 oxygen, nitrogen or sulfur atoms and the alkyl moiety associated with said heteroaralkyl moiety has 1–6 carbon atoms, or a pharmaceutically acceptable salt or ester thereof.

4,552,697

COMPOUND USEFUL IN DETECTING IONS AND METHOD OF PREPARING IT

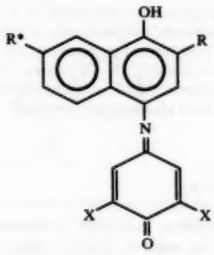
Kin F. Yip, and Steven C. Charlton, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 12, 1983, Ser. No. 493,951

Int. Cl.⁴ C07C *97/22*

U.S. Cl. 260—396 N **8 Claims**

1. A compound having the structure



in which R is H or lower alkyl, R* is intermediate alkyl, and X is halogen or pseudohalogen.

4,552,698

23,23-DIFLUORO-1α,25-DIHYDROXY-VITAMIN D_3

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, and Yoshiro Kobayashi, both of Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

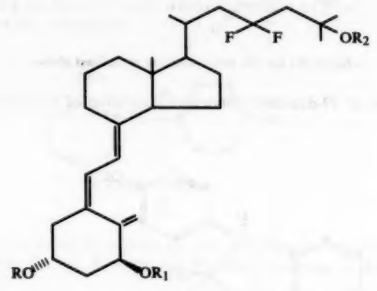
Continuation-in-part of Ser. No. 524,268, Aug. 18, 1984, Pat. No. 4,502,991. This application Aug. 13, 1984, Ser. No. 639,778

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ C07J *9/00*

U.S. Cl. 260—397.2 **4 Claims**

1. Compounds having the formula



wherein each of R, R_1 and R_2 is selected from the group consisting of hydrogen, an acyl group having from one to about four carbon atoms and benzoyl with the proviso that R, R_1 and R_2 cannot all be hydrogen.

4,552,699

PROCESS FOR THE PREPARATION OF 3-ACYLAMINOANILINES

Reinhard Hähnle, Königstein/Taunus, and Theodor Grewer, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

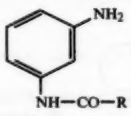
Filed Dec. 13, 1983, Ser. No. 560,919

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246367

Int. Cl.⁴ C07C *102/04*

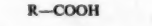
U.S. Cl. 260—404.5 **5 Claims**

1. A process for the preparation of a 3-acylaminoaniline of the formula (1)



(1)

in which R denotes a branched or unbranched alkyl radical having 1–7 carbon atoms or a phenyl group, which can be substituted by 1–2 methyl groups or by 1–2 chlorine atoms, which comprises reacting a carboxylic acid of the formula (2)



(2)

in which R has the meaning mentioned, with an excess of 1,3-diaminobenzene, and separating the reaction mixture by distillation.

4,552,700
ORGANOPOLYSILOXANES CONTAINING SULPHONATE GROUPS, METHOD FOR THE PRODUCTION AND USE THEREOF

Peter Panster, Rodenbach, and Horst Grethe, and Peter Kleinschmit, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,200

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226093

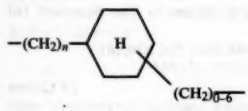
Int. Cl.⁴ C07F *7/08, 5/06, 7/28*

U.S. Cl. 556—9 **45 Claims**

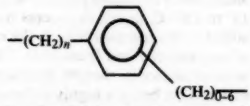
1. An organopolysiloxane containing the same or different units represented by the structural formula:

$$(O_{3/2}Si—R^1—SO_3^-)_xM^{x+} \quad (1)$$

wherein R^1 is a linear or branched alkyl having 1 to 12 C-atoms, cycloalkyl with 5 to 8 C-atoms or:



or

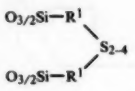


wherein n is an integer from 1 to 6 and indicates the number of sulphur attached methylene groups, x is dependent on M and is an integer from 1 to 4 and M represents hydrogen or a mono- to tetravalent metal ion and the free valences of the oxygen atoms are saturated by silicon atoms of other groups of the formula (1) and/or by cross-linking bridge members

$SiO_{4/2}$	or	$R'SiO_{3/2}$	or	$R_2'SiO_{2/2}$	or
$TiO_{4/2}$	or	$R'TiO_{3/2}$	or	$R_2'TiO_{2/2}$	or
$AlO_{3/2}$	or	$R'AlO_{2/2}$			

wherein R′ is methyl or ethyl,

and/or are saturated by di-, tri- and tetrasulfide units of the general formula:



(2)

wherein R^1 has the same meaning as in formula (1) and may be the same or different, the ratio of the sum of the Si-atoms in formulas (1) and (2) to the bridge atoms silicon, titanium and aluminum ranging from 1:0 to 1:10.

4,552,701
GLYCOPEPTIDE ANTIBIOTICS AND PROCESS OF PREPARATION

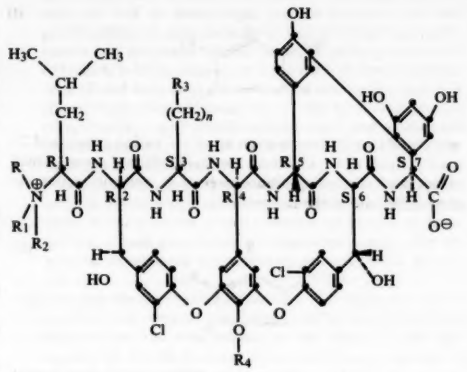
Ramakrishnan Nagarajan, and Amelia A. Schabel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 16, 1984, Ser. No. 600,727

Int. Cl.⁴ C07C *103/52;* **C07H** *15/20*

U.S. Cl. 260—112.5 R **14 Claims**

1. A compound of the formula:



wherein

R, R_1 and R_2 are hydrogen or methyl;

R_3 is $CONH_2$;

R_4 is hydrogen or β-O-glucosyl; and

n is 1 or 2;

provided that, (1) when n is 2, R, R_1 and R_2 must be hydrogen, and (2) when R, R_1 and R_2 are methyl, R_4 must be hydrogen; and its salts.

4,552,702
PROCESS FOR THE PREPARATION OF FATTY ACID ALKYL ESTERS HAVING IMPROVED PROCESSING PROPERTIES

Karl Schmid, Mettmann, and Horst Baumann, Leichlingen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,095

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 3128646

Int. Cl.⁴ C09F *5/10;* **C11B** *3/00*

U.S. Cl. 260—428 **19 Claims**

1. A process for the preparation of lower alkyl esters of higher fatty acids with improved processing properties comprising the steps of

subjecting lower alkyl esters of higher fatty acids of plant and/or animal origin, to a heat treatment above 150° C., in the presence of an effective amount to reduce the hydroxyl number of a material selected from the group consisting of esterification catalysts and carboxylic acid anhydrides, for a time sufficient to effect an improvement in further processing properties, separating purified lower alkyl esters of higher fatty acids from the treated material and recovering said lower alkyl esters of higher fatty acids with improved processing properties.

4,552,703
PRODUCTION OF OPTICALLY ACTIVE CYCLOPENTENOLONES

Takeaki Umemura; Ayumu Inoue, and Satoshi Mitsuda, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

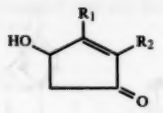
Filed Apr. 16, 1984, Ser. No. 600,389

Claims priority, application Japan, Apr. 19, 1983, 58-069568; Apr. 19, 1983, 58-069569

Int. Cl.⁴ C07C *77/00, 45/65*

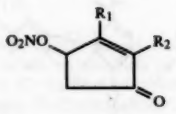
U.S. Cl. 260—466 **13 Claims**

1. A method for producing optically active cyclopentenolones having the formula (I),



(I)

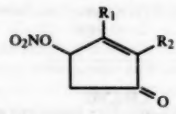
wherein R_1 is a hydrogen atom or a C_1–C_3 alkyl group, and R_2 is a C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl group, which comprises hydrolyzing nitrate ester of an optically active cyclopentenolone of the formula (II),



(II)

wherein R_1 and R_2 are the same as defined above, in a neutral or acidic medium, with an inversion of configuration at the asymmetric center of the 4-position to obtain the configurationally inverted cyclopentenolone of the formula (I).

8. A nitrate ester of an optically active cyclopentenolone of the formula (II),



(II)

wherein R_1 is a hydrogen atom or a C_1–C_3 alkyl group, and R_2 is a C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl group.

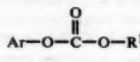
4,552,704

PROCESS FOR THE PRODUCTION OF AROMATIC CARBONATES

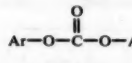
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1983, Ser. No. 565,896
Int. Cl.[4] C07C *68/06*
U.S. Cl. 260—463 **18 Claims**

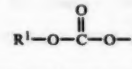
1. An improved process for preparing aromatic carbonates selected from aliphatic aromatic carbonates represented by the formula



diaromatic carbonates represented by the formula

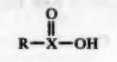


wherein Ar is independently selected from monovalent aromatic radicals and R^1 is selected from monovalent aliphatic radicals, and mixtures thereof which comprises reacting a phenolic compound represented by the formula Ar—OH with a dialiphatic carbonate represented by the formula



or an aliphatic aromatic carbonate represented by the formula

in the presence of a catalytic amount of a transesterification catalyst, the improvement comprising utilizing as the catalyst at least one compound represented by the formula



wherein:

X is selected from Sn and Ti; and

R is selected from monovalent hydrocarbon radicals.

4,552,705

METHOD OF MAKING TRI-(β-CYANOETHYL)AMINE

Dean T. Tsou, Solon; Sandra L. Denman, Brunswick Hills; James D. Burrington, Richmond Heights, and Mark C. Cesa, South Euclid, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 13, 1984, Ser. No. 670,181
Int. Cl.[4] C07C *121/43*
U.S. Cl. 260—465.5 R **13 Claims**

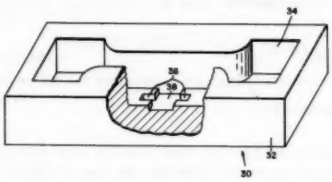
1. A process which comprises reacting acrylonitrile with ammonia in the liquid phase at a temperature in the range from 15° to 250° C. in which process the reactants and a solvent are added to the reaction zone in the ratios of from 2.5 to 30 moles of acrylonitrile and from 20 to 300 moles of said solvent, per mole of ammonia, thereby producing tri-(β-cyanoethyl)amine, said solvent being a highly polar solvent having a high dielectric constant selected from dimethylformamide, dimethyl sulfoxide, formamide, N-methylformamide, 1,2,3-propanetriol, N-methylpropionamide, diethylene glycol, hexamethylphosphoramide, triethanolamine and water.

4,552,706

LINER-PROPELLANT BOND TESTS

Marjorie E. Ducote, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 5, 1983, Ser. No. 539,201
Int. Cl.[4] C06B *21/00, 45/10*
U.S. Cl. 264—3 R **6 Claims**



1. A method of preparing tensile strength and lap shear strength specimens for determining bond strength between a liner/insulation material and a cured hydroxyterminated polybutadiene propellant composition comprising:

(i) preparing a liner/insulation material of a predetermined dimension and thickness and having flat surfaces facing in opposite directions;

(ii) placing said liner/insulation material in a mold having a dogbone configuration and in a predetermined position in said mold;

(iii) casting a curable hydroxyterminated polybutadiene propellant composition onto a portion of said oppositely facing surfaces of said liner/insulation material;

(iv) curing said curable hydroxyterminated polybutadiene

propellant composition to form a secure bond between said liner/insulation material oppositely facing surfaces and said cured propellant composition; and to provide a dogbone shaped specimen in which the hydroxyterminated polybutadiene is securely bonded to oppositely facing surfaces of said liner/insulation material; and

(v) placing said tensile strength and lap shear strength specimens in a machine and determining bond strength between said liner/insulation material oppositely facing surfaces and said cured hydroxyterminated polybutadiene propellant composition.

4,552,707

SYNTHETIC VASCULAR GRAFTS, AND METHODS OF MANUFACTURING SUCH GRAFTS

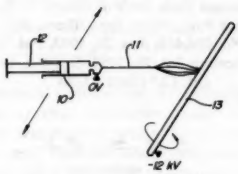
Thien V. How, Woolton, England, assignor to Ethicon Inc., Somerville, N.J. and The University of Liverpool, Liverpool, England

Filed May 9, 1983, Ser. No. 492,864

Claims priority, application United Kingdom, Jun. 2, 1982, 8216066

Int. Cl.⁴ B29C *9/00*

U.S. Cl. 264—24 **1 Claim**



1. A method of manufacturing a synthetic vascular graft by electrostatically spinning an organic polymeric material or a percusor thereof and collecting the spun fibres on a rotating mandrel, which method comprises the step of varying the speed of rotation of the mandrel such that a desired degree of anisotropy is present in the synthetic vascular graft.

4,552,708

METHOD FOR PRODUCING CROSSLINKED FOAM

Takao Kimura, and Yoshinobu Nagaoka, both of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 541,840

Int. Cl.⁴ B29D *27/00*; B29F *3/04*

U.S. Cl. 264—53 **16 Claims**

1. A method of producing a crosslinked foamed article, said method comprising:

(a) uniformly mixing a crosslinkable thermoplastic resin, a crosslinking agent which has a decomposition temperature higher than the melting point of said resin and a foaming agent which has a decomposition or volatization temperature higher than that of said crosslinking agent and generates a gas upon decomposition or volatization;

(b) extruding said mixture through a long-land die provided with a heating means and having a front or upstream portion and a rear or downstream portion, the temperature of said rear portion being higher than the temperature of said front or upstream portion, and said long-land die being further provided with a choking orifice at an intermediate portion between said front or upstream portion and said rear or downstream portion and/or at an end portion thereof, said choking orifice creating back pressure in said long-land die and having a choking ratio A/B of from 4/3–10/2, wherein A is the vertical cross-sectional area of said long-land die in front of said orifice and B is the vertical cross-sectional area of the narrowest section of said orifice, and simultaneously supplying a lubricant into an interface between the inner surface of said long-land die and said mixture;

(c) heating said conveyed mixture in said front or upstream portion of said long-land die to a temperature sufficient to cause decomposition of said crosslinking agent and crosslinking of said crosslinkable thermoplastic resin, the degree of crosslinking as defined by gel ratio being at least 5%;

(d) heating the conveyed mixture from step (c) in said rear or downstream portion of said long-land die to a temperature higher than the temperature in said front or upstream portion of the die to cause decomposition or volatization of said foaming agent; and

(e) releasing the mixture from step (d) from said long-land die into an atmospheric or controlled pressure zone to allow said mixture to expand and form said foamed article.

4,552,709

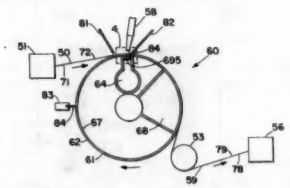
PROCESS FOR HIGH-SPEED PRODUCTION OF WEBS OF DEBOSSED AND PERFORATED THERMOPLASTIC FILM

Thurman J. Koger, II, Hamilton, Ohio; Theodore E. Farrington, Jr., Milford, Me., and Eugene Weinshenker, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,525

Int. Cl.⁴ B29C *1/14*

U.S. Cl. 264—504 **28 Claims**



1. A process for debossing and peforating a substantially continuous web of substantially planar thermoplastic film, using a forming structure having a patterned forming surface with holes and an opposed surface, said forming structure being open from said holes in said forming surface to said opposed surface, said web of film having an indefinite length, a first surface, a second surface, and a thickness, said thickness being the distance between said first surface and said second surface, said film having a melt temperature range, which process comprises the steps of:

(a) providing said web of substantially planar film with said first surface of said web of film proximate said forming surface, said forming structure moving in a direction of said length of said web of film and carrying said web of film in said direction, said web of film being substantially entirely molten;

(b) substantially continuously applying fluid differential pressure across said thickness of said web of film from a first position along said direction of movement of said forming structure to a second position, said first and second positions being fixed relative to said moving forming structure, said fluid differential pressure being sufficiently great to cause said first surface of said web of film to be urged against said forming surface; to cause perforations to be created in said web of film, whereby a web of

debossed and perforated film is formed in the image of said forming surface from said web of film, said web of debossed and perforated film having a first surface and a second surface which correspond to said first surface and said second surface, respectively, of said web of substantially planar film; and to hold said web of debossed and perforated film against said forming surface without permitting substantial spring-back of said web of film;

(c) contacting said second surface of said web of film with a fluid having low heat transfer capacity for a period of time from when said web of substantially planar film passes said first position through when said web of film is debossed and perforated, said web of film remaining substantially entirely molten throughout said period of time; and

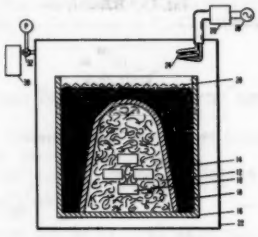
(d) applying cooling fluid to said second surface of said web of debossed and perforated film after said period of time and before said web of debossed and perforated film passes said second position, such that said web of debossed and perforated film is cooled and is set without permitting substantial spring-back of said web of debossed and perforated film by the time said web of debossed and perforated film passes said second position.

4,552,710

PROCESS OF HOT ISOSTATIC PRESSING OF FERRITE MATERIAL

Eugene B. Rigby, Tucson, Ariz.; Ralph W. Scheidecker, and Robert R. Suchomel, both of Byron, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,883
Int. Cl.⁴ B29B *1/14*; B29C *25/00*
U.S. Cl. 264—64 **13 Claims**



1. Process of hot isostatic pressing of ferrite material workpieces of a predetermined thickness in a sealed oven, said ferrite material workpieces having been previously sintered or hot pressed, comprising of steps of:

a. placing ferrite material workpieces in a covered ceramic enclosure;

b. surrounding said ferrite material workpieces by finely ground ferrite pieces of large surface area having a composition substantially similar to said ferrite material workpieces providing good chemical protection;

c. sealing said oven and introducing an inert gas atmosphere under pressure within said oven;

d. elevating said pressure and temperature to predetermined levels in said oven below that previously utilized for sintering or hot pressing said ferrite material workpieces for said sintering or hot pressing; and

e. maintaining said temperature for a predetermine time interval for said ferrite material workpieces in said oven, thereby providing that said ferrite material approaches theoretical density without significant increase in grain size of said ferrite material workpieces.

13. Process of hot isostatic pressing of ferrite material workpieces of a predetermined thickness in a sealed oven, said ferrite material workpieces having been previously sintered or hot pressed, comprising of steps of:

a. placing ferrite material workpieces in a first ceramic enclosure;

b. surrounding said ferrite material workpieces by finely ground ferrite pieces of large surface area having a composition substantially similar to said ferrite material workpieces providing good chemical protection;

c. inverting a second ceramic enclosure over said first ceramic enclosure;

d. filling space between said enclosures with a fused grain;

e. sealing said oven and introducing an inert gas atmosphere under pressure within said oven;

f. elevating said pressure and temperature to predetermined levels in said oven below that previously utilized for sintering or hot pressing said ferrite material workpieces for said sintering or hot pressing; and,

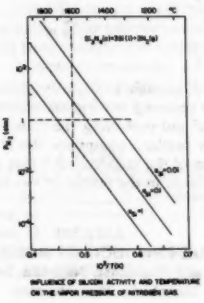
g. maintaining said temperature for a predetermine time interval for said ferrite material workpieces in said oven, thereby providing that said ferrite material approaches theoretical density without significant increase in grain size of said ferrite material workpieces.

4,552,711

USE OF FREE SILICON IN LIQUID PHASE SINTERING OF SILICON NITRIDES AND SIALONS

Rishi Raj, and Sunggi Baik, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 506,466, Jun. 21, 1983, Pat. No. 4,487,840. This application Jul. 26, 1984, Ser. No. 634,530
Int. Cl.⁴ C04B *35/58*
U.S. Cl. 264—65 **5 Claims**



INFLUENCE OF SILICON ACTIVITY AND TEMPERATURE ON THE VAPOR PRESSURE OF NITROGEN GAS

1. In a process of forming a silicon nitride based ceramic through a liquid phase densification process wherein the ceramic forming composition contains at least about 83% silicon nitride having an average particle size ranging from 0.1 μm to about 10 μm and from about 1% to about 7% by weight of the total composition of liquid phase producing oxide, other than aluminum oxide and wherein densification involves sintering in nitrogen at a temperature ranging from about 1600° C. to about 1800° C. at one atmosphere, the improvement which comprises including in said composition from about 1% to about 7% by weight of the total composition of pulverulent free silicon to enhance densification to obtain at least about 98% of theoretical density in a sintering time of up to about 30 minutes.

4,552,712

PROCESS FOR REDUCING SURFACE MELT FRACTURE DURING EXTRUSION OF ETHYLENE POLYMERS

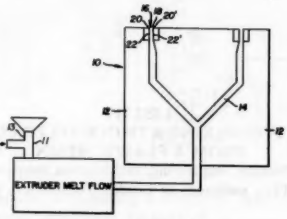
Arakalgud V. Ramamurthy, Somerset, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 508,670, Jun. 28, 1983, abandoned. This application Jul. 3, 1984, Ser. No. 627,516
Int. Cl.⁴ B29F *3/04*
U.S. Cl. 264—85 **17 Claims**

1. A process for substantially reducing surface melt fracture

during extrusion of a molten narrow molecular weight distribution, linear, ethylene copolymer, under conditions of flow rate and melt temperature which would otherwise produce such surface melt fracture which comprises adding an adhesion promoter to said ethylene polymer, extruding said polymer through a die having a die land region defining opposing surfaces terminating in a die gap, at least one of said opposing surfaces being fabricated from stainless steel to provide at least one stainless steel surface adjacent to the molten polymer and wherein the length of the die land to the width of the die gap is about 35:1 to about 60:1 whereby melt fracture is reduced on the surface of the polymer adjacent to said stainless steel surface.

12. A process for substantially reducing surface melt fracture



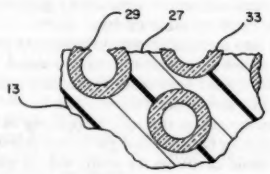
during extrusion of a molten narrow molecular weight distribution, linear, ethylene copolymer, under conditions of flow rate and melt temperature which would otherwise produce such surface melt fracture which comprises adding to said polymer from about 50 to 1500 parts per million of a fatty diethoxylated tertiary amine, subjecting said resin to an inert gas to remove moisture and thereafter extruding said polymer through a die having a die land region defining opposing surfaces terminating in a die gap, at least one of said opposing surfaces being fabricated from stainless steel to provide at least one stainless steel surface adjacent to the molten polymer and wherein the length of the die land to the width of the die gap is about 45:1 to about 55:1 whereby melt fracture is reduced on the surface of the polymer adjacent to said stainless steel surface.

4,552,713

METHOD OF FORMING AN IMPROVED HANDGRIP HAVING NON-SLIP FEATURES

A. G. Cavicchioli, Fort Worth, Tex., assignor to Jamak, Inc., Weatherford, Tex.

Continuation-in-part of Ser. No. 463,904, Feb. 4, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 582,054
Int. Cl.⁴ B29C *59/02*
U.S. Cl. 264—162 **3 Claims**



1. A method of forming a handgrip having improved non-slip features, comprising:

blending a silicone rubber composition from an organopolysiloxane elastomer, a filler material, an organosilicon processing aid, a texturizing material, and a quantity of hollow spheres, the hollow spheres having a density in the range from 0.5 to 0.9 grams/cc;

heating said rubber composition during the blending step to evenly disperse said texturizing material and said hollow spheres within said rubber composition without reacting said texturizing material with said organopolysiloxane elastomer;

cooling and curing said composition to form a handgrip the exterior surface of said handgrip being formed to contain exposed portions of said hollow spheres which are blended throughout said silicone rubber composition;

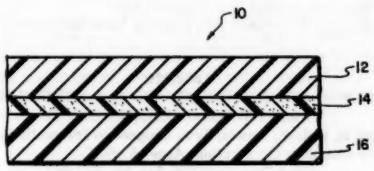
buffing the exterior surface of said handgrip to fracture the exposed portions of said hollow spheres and thereby present a roughened exterior surface to said handgrip.

4,552,714

PROCESS FOR PRODUCING COEXTRUDED FILM OF POLYPROPYLENE, POLYPROPYLENE BLEND, AND NYLON

Duane A. Krueger, Neenah, and Thomas W. Odorzynski, Green Bay, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 236,601, Feb. 20, 1981, Pat. No. 4,361,628. This application Sep. 13, 1982, Ser. No. 417,674
Int. Cl.⁴ B29D *9/00*
U.S. Cl. 264—171 **9 Claims**



1. A process for producing a multiple layer plastic film comprising coextruding a multiple layer film from a multiple layer die, said film comprising:

(a) a layer of polypropylene;

(b) a layer of nylon; and

(c) an adhesive layer juxtaposed between said nylon layer and said polypropylene layer, said adhesive layer being functional for adhesion to said layer of nylon and said layer of polypropylene, said adhesive layer being a blend of a graft copolymer of maleic anhydride onto a polypropylene backbone, and an ungrafted polypropylene; said graft copolymer having been produced in a reaction carried out at a temperature of from about 80° Celsius up to about 10° Celsius below the melting point of the polypropylene, said graft copolymer containing from about 0.1% to 2.5% maleic anhydride based on the total weight of the graft copolymer, said graft copolymer comprising between about 5% and 30% by weight of the blend, and said ungrafted polypropylene comprising between about 70% and 95% by weight of the blend.

4,552,715

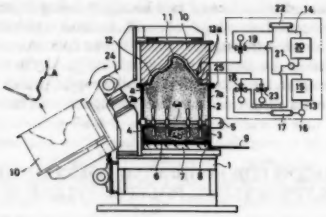
PROCESS FOR PRODUCING A MOLDED SKIN PRODUCT

Yoshio Ando, Kawagoe; Shuno Kumagai, Sayama, and Toshiyuki Kinugasa, Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1983, Ser. No. 494,103
Claims priority, application Japan, May 12, 1982, 57-78195
Int. Cl.⁴ B29C *5/02*
U.S. Cl. 264—309 **1 Claim**

1. A process for producing a molded skin material, comprising the steps of:

charging a desired amount of synthetic resin powder into a treating container disposed below and facing a predetermined shaped molding mold surface;
heating the mold surface to a temperature of at least the melting temperature of the synthetic resin;
fluidizing the charge of powder in the treating container to a level below the mold surface;



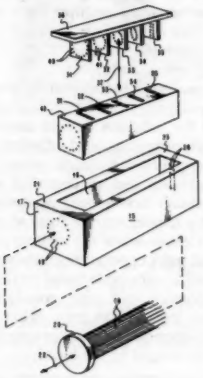
while fluidizing the powder, spattering the fluidized powder upwardly onto the mold surface by violently agitating the fluidized powder by an agitation means whereby a coating of fused resin is formed on the mold surface;
ceasing spattering when the coating reaches a predetermined thickness;
cooling the mold surface, thereby solidifying the coating to form the molded skin material; and
removing the molded skin material from the mold surface.

4,552,716

METHOD FOR MANUFACTURING A WIRE MATRIX PRINT WIRE GUIDING DEVICE

Adolph B. Habich, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,943
Int. Cl.⁴ B29C *7/00, 1/14*
U.S. Cl. 264—328.1 **4 Claims**



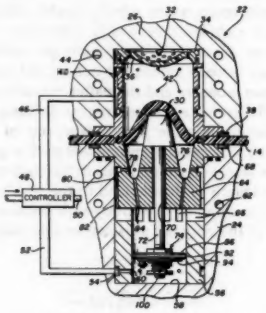
1. In a method of manufacturing a print wire guiding device for a wire matrix print head, the improvement comprising:
axially projecting a bendable manufacturing wire through an end of a mold body;
disposing a plurality of apertured inserts in said mold body, each of said inserts being closely enough spaced to adjacent ones of said inserts and having apertures closely enough aligned with a desired curved trajectory of said wire so that during said axial projection of said wire an aperture of each of said inserts through which said wire is passed directs said wire into an aperture of a next insert through which said wire is to pass, whereby said wire is self-threaded into a curved disposition through said apertures in each of said inserts by said axial projection thereof;
injecting a plastic material into said mold body;
allowing said plastic material in said mold to harden;
retracting said manufacturing wire from said hardened material; and
separating said print wire guiding device from said mold and said apertured inserts.

4,552,717

PROCESS FOR MAKING A THIN WALLED CONTAINER FROM A PLASTIC RESIN

Jackie D. Murley, Big Spring, and Marion Johnson, Baytown, both of Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jun. 26, 1984, Ser. No. 624,851
Int. Cl.⁴ B29C *17/04*
U.S. Cl. 264—549 **2 Claims**



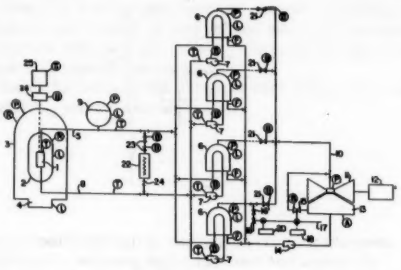
1. An improved process for making a thinwalled container from a sheet of thermoplastic resin comprising the steps of:
heating said sheet,
positioning said sheet between a pre-form mold having a cavity and an article mold aligned with said pre-form mold cavity;
closing said molds on said sheet;
introducing gas into said article mold cavity displacing said sheet into said pre-form mold cavity;
introducing gas into a chamber remote from said pre-form mold cavity to move a piston slidably located in said pre-form mold toward said sheet to displace said sheet partially into said article mold cavity; and,
establishing communication through an opening in a sidewall of said chamber between said gas in said chamber and said pre-form mold cavity on the piston side of said sheet as said piston approaches the end of its travel and thereby introducing said gas from said chamber through said opening and into said pre-form mold cavity to displace said sheet into said article mold cavity to cause said sheet to conform to said article mold forming said article while biaxially orienting said resin and maintaining a thin-walled article.

4,552,718

METHOD AND APPARATUS FOR ON-LINE MONITORING OF THE OPERATION OF A COMPLEX NON-LINEAR PROCESS CONTROL SYSTEM

Albert J. Impink, Jr., Delmont; Joseph A. Rumancik, Murrysville, and James R. Easter, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1982, Ser. No. 394,078
Int. Cl.[4] G21C *7/36*
U.S. Cl. 376—216 **45 Claims**



1. A method of operating a complex, non-linear process control system comprising the steps of:

periodically measuring designated system parameters;

storing selected setpoint values associated with each designated parameter;

sequentially comparing the measured value of selected of said designated parameters with the associated setpoint value to generate a representation of the measured range of said parameter, each parameter in the sequence being selected based upon the measured range of the preceeding parameter;

generating a representation of the current status of the system in response to the measured ranges of the sequentially selected parameters; and

operating the control system to effect changes in the measured value of at least one system parameter in response to selected representations of the status of the system to initiate a predetermined modification to the system status.

9. A method of monitoring the status of a complex non-linear control system comprising the steps of:

storing signals representative of the current on-line value of designated system parameters and periodically updating said stored signals;

generating setpoint signals for each designated system parameter;

repetitively, sequentially comparing the stored signal for selected parameters with the corresponding setpoint signal to generate a signal representative of the current range of the selected parameter, with the sequence of comparisons being determined by the current range of the preceding parameter; and

generating a representation of the status of the process control system based upon the current ranges of the sequentially selected parameters.

23. Apparatus for displaying the status of a nuclear fueled electric power generating unit comprising:

means for on-line measurement of the values of selected system parameters;

means for indicating selected set point values for each selected parameter to define preselected ranges for the selected parameters;

means for comparing the measured value of said selected parameters with the selected set point values to determine the preselected range of values into which the measured value of each selected parameter falls;

means for generating a visible pattern of lines which begins with a single line segment and successively branches out into additional line segments with the line segments emanating from each branching point each representing one of the preselected ranges of values for a successive one of said selected parameters; and

means for generating a visible indication associated with said pattern of lines representing a continuous path of line segments through said pattern with each line segment in the path representing the preselected range of values in which the measured value of one of the selected parameters falls.

38. An apparatus for monitoring the status of a complex, non-linear process control system comprising:

means for generating signals representative of the on-line value of designated system parameters;

means for generating selected setpoint signals for each designated system parameter;

means for storing said on-line value signals and said setpoint signals;

means for periodically updating the stored on-line value signals with the current on-line value signals;

means for sequentially comparing selected stored on-line value signals with the corresponding setpoint value signal to generate a signal representative of the range of said stored on-line value signal, said parameters in said sequence being selected on a predetermined basis of the value of the range signal of the preceeding parameter in the sequence; and

means responsive to the sequence of range signals for generating a representation of system status.

39. The apparatus of claim **38** in combination with the complex, non-linear process control system and including means responsive to said representation of system status for modifying the operation of the process control system to effect a predetermined change in the on-line value of at least one of said designated system parameters.

4,552,719

METHOD OF SINTERING STAINLESS STEEL POWDER

Toru Morimoto; Tsuyoshi Ohsaki; Toshio Ohkawa, and Masahito Fujita, all of Narashino, Japan, assignors to N.D.C. Co., Ltd., Chiba, Japan

Continuation of Ser. No. 212,462, Dec. 3, 1980, abandoned. This application Aug. 31, 1983, Ser. No. 528,005
Int. Cl.[4] B22F *1/00, 3/10*
U.S. Cl. 419—2 **1 Claim**

1. A method for manufacturing a porous sintered stainless steel body comprising the steps of:

(a) forming a mixture comprising stainless steel powder, Ni-Mn powder and Ni-Cr powder, wherein the particles of the Ni-Mn powder and the Ni-Cr powder are smaller than the particles of said stainless steel powder;

(b) pouring the resulting powder mixture of step (a) into a heat-proof vessel without applying any pressure to said mixture;

(c) sintering said mixture poured into said heat-proof vessel of step (b) under a non-oxidizing atmosphere without applying any pressure to said mixture such that said sintering is started at about at least 1000° C. with the temperature gradually being raised and said sintering is finished at 1200° C. to 1350° C.

4,552,720

DEBRIS COMPRESSING AUTOCLAVE

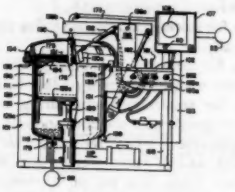
Richard E. Baker, Sr., Downey, and Richard E. Baker, Jr., Santa Ana, both of Calif., assignors to American Sterilizer Company, Erie, Pa.

Continuation-in-part of Ser. No. 432,241, Jan. 24, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,234
Int. Cl.[4] A61L *2/06*
U.S. Cl. 422—26 **5 Claims**

1. A process for rendering discarded medical articles safe for disposal comprising the steps of:

providing a sealable receptacle lined with a liner made of thermoplastic material;
introducing discarded medical articles into said liner;
injecting steam into said liner to sterilize said medical articles and to soften said liner to a deformable state;
compressing said sterilized medical articles within said deformable liner to encapsulate them within the thermoplastic material; thereby forming an encapsulated mass; and
permitting said encapsulated mass to cool, whereby said thermoplastic material of said liner retains the shape brought about by said compression step.

2. Apparatus for rendering discarded medical articles safe for disposal, comprising:
a sealable receptacle having an interior chamber;



a thermoplastic liner lining the interior chamber of said sealable receptable said liner thereby forming an interior region for receiving discarded medical articles;
means for introducing steam into said sealable receptacle; said liner including means for permitting the passage of steam into the interior region to thereby sterilize discarded medical articles disposed therein and to soften said thermoplastic liner to a deformable state;
means associated with said sealable receptacle for compressing said thermoplastic liner and discarded medical articles disposed therein; and
control means for activating said compressing means after said liner has become deformable, whereby once said liner and discarded medical articles disposed therein are compressed, said liner conforms to the shape of the so compressed mass of discarded medical articles.

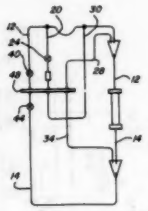
4,552,721

METHOD FOR DISINFECTING, FOR REUSE, SEPARATION DEVICES FOR BLOOD AND ASSOCIATED FLUID LINES

Philip W. Fentress, Deerfield; Rodney S. Kenley, Evanston, and William J. Schnell, Libertyville, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 19, 1983, Ser. No. 524,705
Int. Cl.[4] A61L *2/18*
U.S. Cl. 422—28 **7 Claims**

1. A method of disinfecting, for reuse after a hemodialysis treatment, a dialyzer and its interconnected arterial and venous blood lines and intravenous administration set, the blood lines having device and patient ends and the device ends communicating with the dialyzer and having peripheral lines for communicating with medical devices, the patient end of the venous blood line communicating with a patient, comprising the steps of:
connecting the patient end of the arterial line to a saline solution container, the intravenous administration set being connected to the saline solution container;
allowing saline solution to flow from the saline solution container through the arterial blood line, intravenous administration set and dialyzer and through the venous blood line for rinsing back blood to a patient;
connecting the patient end of the venous blood line to a container of reuse solution;



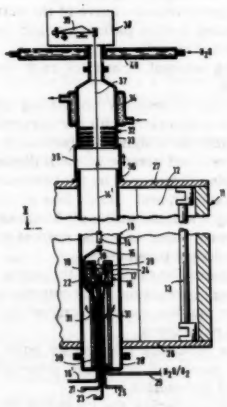
connecting the peripheral lines of the blood lines to a multiple connection manifold which provides a common connection allowing the blood lines and administration set to be in interconnected flow relation; and,
allowing reuse solution to flow from the container of reuse solution through the venous blood line and its peripheral lines, dialyzer and intravenous administration set and through the arterial blood line and its peripheral lines.

4,552,722

APPARATUS FOR THE HOT GAS CORROSION OF SAMPLES OF MATERIAL

Klaus Fritscher, Cologne, and Horst Gedanitz, Leverkusen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Jun. 9, 1983, Ser. No. 502,553
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222182
Int. Cl.[4] G01N *17/00*
U.S. Cl. 422—53 **11 Claims**



1. An apparatus for determining the corrosive effect of corrosion stimulating substances on selected material which comprises:
(a) a means for freely suspending a sample of material to be corroded by a corrosive stimulating substance comprising

an upright pipe having a central axis where the sample of material is found, the wall of said pipe being substantially permeable to radiation from a radiant heat source;

(b) means for introducing a corrosive gas into said means for suspending said sample;

(c) crucible means for receiving and evaporating said corrosive stimulating substance having a peripheral wall which is impermeable to radiation from a radiant heat source, said crucible means being positioned beneath said sample of material;

(d) means for heating said sample of material comprising a radiant heat source located outside said pipe whereby radiation from said heat source is directed through said pipe wall onto said sample; and

(e) means for heating said corrosive stimulating substance receiving and evaporating means.

4,552,723

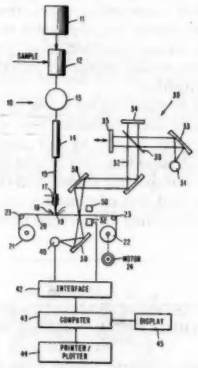
LC/FTIR SYSTEM WITH THERMOSPRAY SOLVENT SEPARATION

Gary E. Adams, Danbury; John M. Casper, Brookfield, both of Conn., and Roy J. Gritter, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,273

Int. Cl.[4] G01J *1/00*; G01N *21/13, 30/02*

U.S. Cl. 422—66 **5 Claims**



1. In a combined LC/FTIR system having an LC and an FTIR spectrometer, said LC effluxing an effluent comprising a solvent and separated sample components, said spectrometer comprising an IR detector and means for directing IR energy along an optical path terminating at said detector, the combination comprising:

a deposition media movable along a media path including first and second stations, said optical path traversing said media path at said second station; and

thermospray means located at said first station, said thermospray means being connected to said LC to receive said solvent and said separated sample components, said thermospray means being operative to vaporize said solvent and to deposit said separated sample components at different locations and at different times on said media as it moves through said first station, whereby said separated components are non-destructively analyzed by said spectrometer as said media passes through said second station.

4,552,724

REACTION AND HEAT EXCHANGER APPARATUS

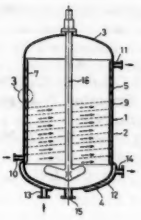
Tadao Matsumoto, Takasago, and Kazuo Inoue, Kakogawa, both of Japan, assignors to Shinko-Pfaudler Company, Ltd., Kobe, Japan

Continuation of Ser. No. 353,884, Mar. 2, 1982, abandoned. This application Apr. 11, 1984, Ser. No. 599,279

Claims priority, application Japan, Mar. 9, 1981, 56-34114

Int. Cl.[4] F28D *21/00*

U.S. Cl. 422—138 **8 Claims**



1. A reaction apparatus comprising a pressure proof vessel for a reactant under relatively high pressure, said vessel being formed by:

(a) a generally cylindrical outer wall;

(b) a generally cylindrical inner liner having a substantially smooth interior surface, said liner being positioned substantially concentrically within said outer wall and spaced from said outer wall, said space between said wall and said liner being separated from the interior volume of said liner, and said inner liner having a radial dimension that is substantially less than said outer wall;

(c) a support positioned in said space, said support including a plurality of support portions that extend substantially radially from said outer wall to said inner liner, said plurality of support portions extending generally parallel to each other and being separated to form flow paths therebetween, the width of each path being substantially equal to the radial width of said support portions and the height of said paths being equal to the distance between said support portions;

(d) said liner including a plurality of strip portions having a width which is substantially equal to the distance between said support portions, said strip portions extending substantially parallel to each other and to said support portions, and said strip portions extending between the radially inner edges of two support portions;

(e) weld metal securing said strip portions to said radially inner edges of said support portions to form a substantially smooth continuous interior surface;

(f) weld metal securing said outer wall to the radially outer edges of said support portions and;

(g) said outer wall having a plurality of flow openings therein leading to said flow paths.

5. A method of making a reaction vessel including a generally cylindrical outer wall, a generally cylindrical liner spaced interiorly from said wall, and a support in the space between said wall and said liner, said method comprising the steps of:

(a) fabricating said generally cylindrical wall of a weldable metal;

(b) forming a plurality of elongated metal support portions;

(c) positioning said support portions on the interior surface of said outer wall at substantially regularly spaced locations;

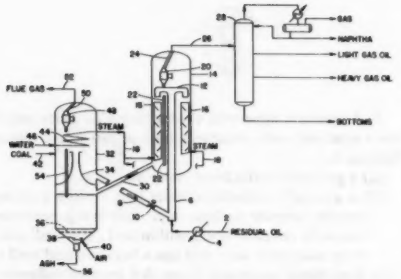
(d) welding said support portions to said wall to form said support;
(e) forming a plurality of elongated metal liner portions having a radial dimension that is substantially less than said outer wall and a width that is substantially equal to the distance between said support portions;
(f) positioning the side edges of said liner portions against the radially inner edges of said support portions; and
(g) welding said side edges of said liner portions to adjacent liner portions and to said support portions to form a substantially smooth continuous interior liner surface and flow paths between said support portions.

4,552,725

APPARATUS FOR CO-PROCESSING OF OIL AND COAL

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 271,054, Jun. 5, 1981, Pat. No. 4,390,409. This application Feb. 7, 1983, Ser. No. 464,165
Int. Cl.⁴ B01J *8/18*
U.S. Cl. 422—140 **9 Claims**



1. Apparatus for converting coal and oil to volatile hydrocarbons comprising:
(a) a combustor having an upper heating chamber and a lower combustion chamber;
(b) a combustor riser means for separating said upper heating chamber and said lower combustion chamber and for supporting feed coal thereon, said combustor riser mean comprising means for the passage of combustion gases therethrough, thereby indirectly heating the feed coal supported thereon;
(c) inlet means for a stripped non-volatile hydrocarbon portion and means for combusting the stripped non-volatile hydrocarbon portion in said combustion chamber to produce hot combustion gas;
(d) means for introducing air to said combustion chamber;
(e) means for passing water through said heating chamber wherein hot combustion gases from said combustion chamber indirectly heat the water to generate steam;
(f) means for introducing feed coal into said heating chamber on top of said combustor riser means, the feed coal being indirectly heated by hot combustion gas passing through said passage means of said combustor riser; and
(g) means for removing effluent gas from said heating chamber.

3. Apparatus for converting coal and oil to volatile hydrocarbons comprising:
(a) a riser reactor having an upper portion and a lower portion;
(b) a first inlet means in the lower portion of said reactor for introducing preheated feed coal to said reactor;
(c) a second inlet means in the lower portion of said reactor for introducing oil to said reactor for admixture with said preheated feed coal;
(d) an outlet means in the upper portion of said reactor for delivering a first cracked hydrocarbon volatilized portion and a non-volatilized hydrocarbon portion from said reactor;
(e) a steam stripping vessel having an upper portion and a lower portion, said outlet means of said reactor communicating with the upper portion of said stripping vessel wherein said first cracked hydrocarbon volatilized portion is separated from said non-volatilized hydrocarbon portion;
(f) a stripping chamber within said lower portion of said stripping vessel, said stripping chamber receiving said non-volatilized hydrocarbon portion from said upper portion of said stripping vessel;
(g) means for introducing steam to said stripping chamber, said steam contacting said non-volatilized hydrocarbon portion producing a second cracked volatilized hydrocarbon portion;
(h) means for fractionating said first and second volatilized hydrocarbon portions to obtain hydrocarbon products;
(i) means for transporting said first and second volatilized hydrocarbon portions from the upper portion of said stripping vessel to said fractionating means;
(j) a combustor having an upper heating chamber and a lower combustion chamber;
(k) a combustor riser means for separating said upper heating chamber and said lower combustion chamber and for supporting feed coal thereon, said combustor riser means comprising means for the passage of combustion gases therethrough, thereby indirectly heating the feed coal supported thereon;
(l) means for transporting the stripped non-volatile hydrocarbon portion from said stripping chamber to said combustion chamber to produce hot combustion gas;
(m) means for introducing air to said combustion chamber;
(n) means for passing water through said heating chamber wherein hot combustion gases from said combustion chamber indirectly heat the water to generate steam;
(o) means for transporting said steam generated in said heating chamber to said means for introducing steam to said stripping chamber;
(p) means for introducing feed coal into said heating chamber on top of said combustor riser means, the feed coal being indirectly heated by hot combustion gas passing through said passage means of said combustor riser;
(q) means for transporting heated feed coal from said heating chamber to said first inlet means; and
(r) means for removing effluent gas from said heating chamber.

4,552,726

PLANT CONSISTING OF MODULAR ELEMENTS FOR DEGRADING ORGANIC WASTES BY MEANS OF EARTH WORMS

Adriana Grappelli; Umberto Tomati, both of Rome, and Grazio Palma, Mentana, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

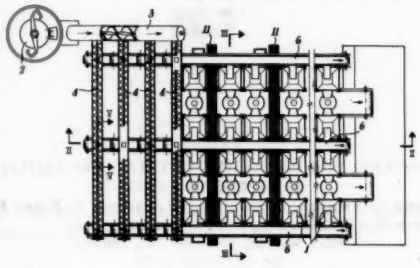
Filed Jun. 15, 1984, Ser. No. 621,287
Claims priority, application Italy, Jun. 17, 1983, 48526 A/83
Int. Cl.⁴ C05F *9/02*; B65G *1/04, 37/00*
U.S. Cl. 422—184 **5 Claims**

1. A modular element plant for degrading organic wastes by means of earth worms, comprising, in combination
(a) a tank for organic wastes;
(b) a plurality of working containers symmetrically distributed in a plurality of container layers, each having at least one pair of container rows;
(c) a first horizontal conveying means for each container layer;
(d) two second horizontal conveying means for each pair of container rows, arranged beneath said first horizontal conveying means perpendicularly thereto;
(e) an inclined conveying means connecting said tank with one end of said first horizontal conveying means;
(f) output openings provided in said first horizontal convey-

ing means to discharge organic wastes, received from said inclined conveying means, onto said second horizontal conveying means;

(g) a pluraltiy of chute means on said second conveying means for charging said organic wastes into the containers of each container row;

(h) a plurality of hopper means each arranged between two containers of adjacent container rows of a said pair of rows, except for the containers of the uppermost and lowest layers;



(i) opening means at the bottom of each working container for discharging the degraded material into said hopper means;

(j) a third horizontal conveying means arranged beneath said hopper means, whereby said hopper means and the container of the lowest container layer discharge the degraded material onto said third conveying means to convey it into storage chambers.

4,552,727

COOLING DEVICE

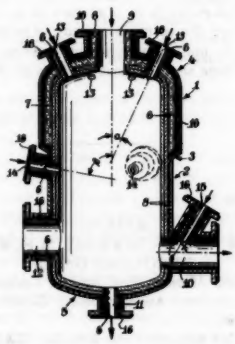
Kurt Schuchardt, Brühl; Harald Scholz, Erftstadt; Hans W. Neuss, Brühl, and Georg Pech, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,057

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309576

Int. Cl.[4] B01J *19/02;* **F27D** *1/00;* **F28F** *21/04, 21/06*

U.S. Cl. 422—241 **10 Claims**



1. A cooling device for quenching hot, highly corrosive combustion gases containing chlorine and hydrogen chloride comprising an elongated steel vessel having a longitudinal axis, upper and lower portions, and rounded top and bottom end portions, an axial inlet connection means on the top end portion of the steel vessel, a plurality of quench injection connection means inclined with respect to the longitudinal axis of the vessel and disposed at regular intervals around a horizontal zone situated in the top third of the steel vessel for use in injecting quenching liquid into the vessel, a lateral outlet connection means in the lower third of the steel vessel above the rounded bottom end portion providing an outlet for quenched combustion gases and quenching liquid, an axial quench outlet connection means on the bottom end portion of the steel vessel for use in cleaning purposes and as an outlet for quenching liquid, an acid-resistant hard rubber lining extending over the interior surfaces of the steel vessel and all connection means, a first acid-resistant ceramic lining extending over the interior surfaces of the acid-resistant hard rubber lining in the upper steel vessel portion and all connection means, a refractory lining of heat insulating bricks on the interior of the first acid-resistant ceramic lining in the upper portion of the steel vessel, the upper steel vessel portion comprising 40 to 50% of the total height of the vessel and having a diameter larger than the diameter of the lower steel vessel portion, and the heat-insulating bricks in the upper steel vessel portion and the acid-resistant hard rubber lining in the lower steel vessel portion having a second acid-resistant ceramic lining on the interior surfaces thereof, the interior surfaces of the heat-insulating bricks in the upper steel vessel portion and the acid-resistant hard rubber lining in the lower steel vessel portion forming a cylindrical surface of equal diameter throughout the elongated steel vessel.

4,552,728

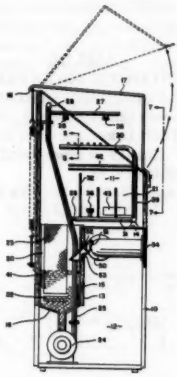
DECONTAMINATION APPARATUS

William R. Taylor, Lugarno, Australia, assignor to Hal Johnston Pty. Limited, New South Wales, Australia

Continuation of Ser. No. 262,453, May 11, 1981, abandoned. This application Jan. 3, 1983, Ser. No. 455,429

Int. Cl.[4] A61L *9/00*

U.S. Cl. 422—300 **12 Claims**



1. A decontamination apparatus comprising a decontamination chamber for holding and treating articles to be decontaminated, a lid arranged to provide access to said chamber for installing articles to be decontaminated and for removal therefrom, an ancillary chamber containing decontamination fluid supply and control means for said decontamination chamber, said decontamination chamber comprising at least two regions so as to provide one relatively deep region at the rear of said apparatus wherein elongate breathing tubes can be suspended vertically to provide complete drainage, and a second relatively shallow region at the front of said apparatus wherein smaller articles such as breathing masks can be held or suspended, at least a lower portion of said deep region being defined by a trough into which decontaminating fluid can

drain from said decontamination chamber, said decontamination chamber further including support devices for holding articles to be decontaminated, spray devices defined by a plurality of downwardly directed nozzles for supplying decontamination fluid into the interior of said elongate breathing tubes, each nozzle including an adjustable jet rod for regulating the spray within said tubes, said spray devices arranged in both decontamination regions for spraying decontamination fluid into or over articles arranged in the decontamination chamber, and distributing means comprising a network of pipes and manifolds for transferring decontamination fluid from said trough to said spray devices, the spray devices and distributing means provided in said shallow region of said decontamination chamber being defined by a removable spraying assembly, the distributing means for said elongate breathing tubes including a manifold located in the upper portion of said deep region of said decontamination chamber, said manifold being provided with said spray devices.

4,552,729

METHOD FOR REMOVING TIN FROM SODIUM TUNGSTATE SOLUTION

Michael J. Miller, Towanda; Martin C. Vogt, Monroeton, and Richard A. Scheithauer, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 7, 1984, Ser. No. 679,419
Int. Cl.[4] C01G *41/00*
U.S. Cl. 423—55 **5 Claims**

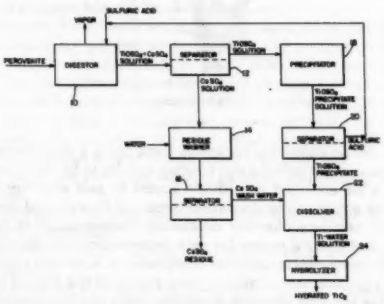
1. A process for removing tin from aqueous sodium tungstate solutions said process comprising:
(a) adding ammonia to said sodium tungstate solution;
(b) adjusting the pH of the ammonia-treated sodium tungstate solution to above about 9.5;
(c) adding magnesium chloride to the pH adjusted sodium tungstate solution to form insoluble material containing the major portion of the tin and a resulting solution containing the major portion of tungsten; and
(d) separating the insoluble material from the resulting solution.

4,552,730

RECOVERY OF TITANIUM FROM PEROVSKITE USING SULFURIC ACID LEACHING

Monte B. Shirts, South Jordan; Dale A. Martin, and Allan E. Petersen, both of Salt Lake City, all of Utah, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 27, 1984, Ser. No. 644,303
Int. Cl.[4] C01G *23/00*
U.S. Cl. 423—82 **5 Claims**



1. A method of treating perovskite to produce a titanium-bearing solution suitable for recovering the titanium as hydrated titanium dioxide, comprising the steps of:
(a) leaching the perovskite with a strong sulfuric acid solution to produce a slurry of pregnant acid leach solution containing dissolved titanium and insoluble calcium sulfate;
(b) separating the titanium-containing pregnant acid leach solution from the insoluble calcium sulfate residue;
(c) precipitating mixed titanium sulfates from the pregnant acid leach solution by heating said solution;
(d) separating the mixed titanium sulfates precipitate from the remaining sulfuric acid solution; and
(e) redissolving the mixed titanium sulfates precipitate in water or dilute acid solution.

4,552,731

PROCESS FOR PREPARING CRYSTALLINE ZEOLITE COMPOSITION ERC-2

David E. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1983, Ser. No. 550,897
Int. Cl.[4] C01B *33/28*
U.S. Cl. 423—118 **11 Claims**

1. A process for preparing a crystalline zeolite having a composition, in terms of mole ratios of oxides, in the range:

$$0.9 \text{ to } 1.1\ M_2O:Al_2O_3:2.5 \text{ to } 5.1\ SiO_2:0 \text{ to } 6\ H_2O$$

where M is K or a mixture of K and Na, where Na is no more than 30 mole percent of the mixture, and characterized by having an X-ray powder diffraction pattern essentially identical to that given in Table IV which is characteristic of zeolite L, which comprises:
(a) preparing a reaction mixture comprising water, a source of silica, metakaolin, KOH and up to about 30 mole percent of NaOH based on total moles of KOH and NaOH, said reaction mixture having a composition, in terms of mole ratios of oxides, within the following ranges:

$M'_2O:Al_2O_3$	1.0 to 1.6
$SiO_2:Al_2O_3$	2.5 to 5.1
$H_2O:Al_2O_3$	80 to 140

where M' is either K or a mixture of K and Na; and
(b) maintaining the reaction mixture at between about 140° and 300° C. under autogeneous pressure for a sufficient period of time so as to form crystals of the zeolite.

4,552,732

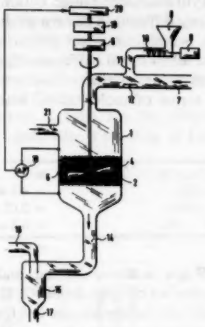
METHOD OF AND AN APPARATUS FOR SCRUBBING PYROLYSIS GASES

Klaus Hillekamp, Munich, Fed. Rep. of Germany, assignor to Deutsche Kommunal-Anlagen Miete GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,748
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1982, 3230472
Int. Cl.[4] C01B *7/00*
U.S. Cl. 423—210 **5 Claims**

1. A method of scrubbing hot pyrolysis gas comprising introducing a particulate scrubbing agent into a stream of gas to be scrubbed, passing said stream with scrubbing agent

downwardly into a bulk bed filter, continuously agitating the particles of the bulk bed filter, withdrawing scrubbed gas from



the bulk bed filter and controlling the degree of agitation responsive to the pressure drop in the bulk filter bed.

4,552,733

POLYFUNCTIONAL CATALYSTS AND METHOD OF USE

Charles E. Thompson, Warren; John J. Mooney, Wyckoff; Carl D. Keith, Summit, all of N.J., and William A. Mannion, San Francisco, Calif., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 519,218, Aug. 3, 1983, abandoned, which is a continuation of Ser. No. 335,128, Dec. 28, 1981, abandoned, which is a continuation of Ser. No. 28,515, Apr. 9, 1979, abandoned, which is a division of Ser. No. 833,922, Sep. 16, 1977, Pat. No. 4,157,316, which is a continuation-in-part of Ser. No. 608,084, Aug. 27, 1975, abandoned. This application Dec. 18, 1984, Ser. No. 682,978

Int. Cl.[4] B01D *15/34, 53/00;* **B01J** *8/02*

U.S. Cl. 423—213.5 **31 Claims**

1. A method of reacting contaminants in combustion exhaust gases to substantially simultaneously oxidize gaseous hydrocarbons and carbon monoxide and reduce nitrogen oxides therein, comprising reacting said gases with a controlled approximately stoichiometric amount of oxygen under conditions which convert said contaminants to carbon dioxide, water and nitrogen, by contacting said gases with a catalyst consisting essentially of:

(a) an alumina support selected from the group consisting of alumina and alumina stabilized with one or more rare earth oxides;

(b) a platinum group metal component dispersed on the support and selected from the group consisting of (i) to (iv), as follows: (i) platinum plus at least one of rhodium, ruthenium and iridium; (ii) platinum plus palladium plus at least one of rhodium, ruthenium and iridium; (iii) the metals of each combination of (i) as an alloy with each other; and (iv) the metals of each combination of (ii) as an alloy with each other;

(c) a base metal oxide component, the base metal thereof being selected from metals having atomic numbers from 25 to 28 and rhenium, and mixtures thereof, said base metal oxide component being present in a weight ratio to said platinum group metal component of at least 2 to 1; and

(d) a carrier on which said support, said platinum group metal component and said base metal oxide component are deposited.

4,552,734

FLUIDIZATION PROCESS FOR REMOVING TOTAL REDUCED SULFUR COMPOUNDS FROM INDUSTRIAL GASES

Joseph Iannicelli, Jekyll Island, Ga.; Leif Caspersen, Horsholm, Denmark; Jan Hansen, Lyngby, Denmark, and Sven Pedersen, Gentofte, Denmark, assignors to Aquafine Corporation, Brunswick, Ga.

Filed Sep. 8, 1983, Ser. No. 530,267

Int. Cl.[4] C01B *17/16, 31/20*

U.S. Cl. 423—230 **23 Claims**

1. A process for the removal of Total Reduced Sulfur compounds from an industrial gas comprising the steps of:

(a) fluidizing substantially dry, activated manganese dioxide absorbent particles in a reaction zone with an elevated temperature stream of said industrial gas to effect oxidation of said Total Reduced Sulfur compounds and absorption of Total Reduced Sulfur compound oxidation products on said absorbent particles;

(b) recovering manganese dioxide absorbent particles containing areas of reduced manganous compounds from said reaction zone;

(c) suspending at least a part of the absorbant particles recovered in step (b) in water to produce an aqueous regeneration suspension;

(d) subjecting at least the aqueous portion of said regeneration suspension to liquid phase oxidation to produce an activated manganese dioxide absorbent-containing suspension;

(e) drying the activated manganese dioxide absorbent-containing suspension to produce substantially dry, activated manganese dioxide absorbent particles; and

(f) recycling the activated manganese dioxide absorbent to the reaction zone.

4,552,735

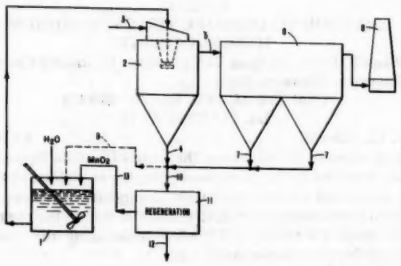
PROCESS FOR REMOVING TOTAL REDUCED SULFUR COMPOUNDS FROM INDUSTRIAL GASES USING MANGANESE DIOXIDE

Joseph Iannicelli, Brunswick, Ga.; Leif D. Caspersen, Horsholm; Jan M. Hansen, Lyngby, and Jens C. T. Moller, Allerod, all of Denmark, assignors to Aquafine Corporation, Brunswick, Ga.

Filed Apr. 20, 1983, Ser. No. 486,672

Int. Cl.[4] B01D *53/34*

U.S. Cl. 423—224 **25 Claims**



3. A process for the removal of Total Reduced Sulfur compounds from an industrial gas comprising the steps of:

(a) preparing an aqueous feed suspension comprising an activated manganese dioxide absorbent;

(b) atomizing said feed suspension in a spray dryer to form fine droplets of said suspension and contacting the atomized droplets with a stream of said industrial gas, said gas at a temperature above 100° C. in said spray dryer to effect oxidation of said Total Reduced Sulfur compounds and absorption of Total Reduced Sulfur compound oxidation products on said absorbent while simultaneously drying

said atomized droplets to produce a dry powder comprising particles of unreacted manganese dioxide containing areas of reduced manganous compounds, whereby the content of Total Reduced Sulfur compounds in said industrial gas is lowered;

(c) recovering said dry powder produced in said spray dryer;

(d) providing an aqueous regeneration medium by supplying a flow of oxygen-containing gas through said aqueous medium;

(e) adding to said aqueous regeneration medium at least a part of the dry powder recovered in step (c) or an aqueous extract thereof;

(f) after the oxygen-containing gas flow of step (d) has begun, maintaining, by alkaline material addition if necessary, the pH in said regenerating medium at an alkaline level sufficient to produce an activated manganese dioxide absorbent;

(g) continuing the flow of said oxygen-containing gas through the alkaline regenerating medium for a period sufficient to regenerate an activated manganese dioxide absorbent; and

(h) recycling the activated manganese dioxide absorbent produced in step (g) for use in the preparation of said aqueous feed suspension of step (a).

4,552,736

POTASSIUM FLUORIDE STABILIZED AMMONIUM NITRATE

Indu B. Mishra, Carbondale, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed May 2, 1983, Ser. No. 490,633
Int. Cl.[4] C05C *1/02*
U.S. Cl. 423—266 **3 Claims**

1. Ammonium nitrate-potassium fluoride mixed crystals wherein the weight per cent of potassium fluoride in the mixed crystal is within the range of from about 0.5% to about 2% by weight.

3. A method of stabilizing ammonium nitrate which comprises the steps of:

(a) heating the ammonium nitrate to the molten state,

(b) adding a stabilizing amount of KF to the ammonium nitrate, and

(c) cooling the ammonium nitrate to below the melting point.

4,552,737

METHOD TO IMPROVE YIELDS OF SODIUM HYPOPHOSPHITE

William E. Estes, Ossining, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 13, 1984, Ser. No. 570,478
Int. Cl.[4] C01B *15/16*
U.S. Cl. 423—307 **4 Claims**

1. A process for increasing the yield of sodium hypophosphite produced by the reaction of phosphorus, sodium hydroxide, water and calcium hydroxide, comprising increasing the $NaOH/P_4$ from stoichiometric amount to within the range of from about 2.4 to about 3.0 while maintaining the lime to phosphorus ratio above about 1.21.

4,552,738

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-12

Mae K. Rubin, Bala Cynwyd, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 25, 1984, Ser. No. 614,071
Int. Cl.[4] C01B *33/28*
U.S. Cl. 423—328 **17 Claims**

1. A method for synthesizing a crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$(0.9 \text{ to } 2.5)R_2O:(0.3 \text{ to } 2.2)M_{2/n}O:(0.02 \text{ to } 0.8)Al_2O_3:(100-)SiO_2$

wherein M is at least one alkali metal cation having the valence n, and R is benzyltriethylammonium cation, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises preparing a mixture containing sources of alkali metal oxide, an organic nitrogen-containing cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	= 80–∞
H_2O/OH^-	= 40–400
OH^-/SiO_2	= 0.02–0.3
$R/(R + M)$	= 0.2–0.8

wherein M and R are as above defined, and maintaining the mixture at a temperature of from about 90° C. to about 175° C. until crystals of the crystalline silicate are formed.

6. A synthetic crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$(0.9 \text{ to } 2.5)R_2O:(0.3 \text{ to } 2.2)M_{2/n}O:(0.02 \text{ to } 0.8)Al_2O_3:(100-)SiO_2$

wherein M is at least one alkali metal cation having the valence n, and R is benzyltriethylammonium cation, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification.

4,552,739

METHOD OF PREPARING CRYSTALLINE ZEOLITE ZSM-12 AND PRODUCT

Günter H. Kühl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 559,669, Dec. 9, 1983, abandoned. This application May 3, 1985, Ser. No. 729,099
Int. Cl.[4] C01B *33/28*
U.S. Cl. 423—328 **5 Claims**

1. A method for preparing crystalline zeolite ZSM-12 which comprises preparing a reaction mixture containing a source of an alkali or alkaline earth metal oxide, an oxide of silicon, diethyldimethylammonium ion, and water and having a composition, in terms of mole ratios of oxides, within the following ranges:

SiO_2/Al_2O_3	= 40 or higher
$M_2O/(DEDMA)_2O$	= 0.2 to 2.0
H_2O/OH^-	= 50 to 400
OH^-/SiO_2	= 0.05 to 0.35

wherein M is an alkali or alkaline earth metal and DEDMA is a diethyldimethylammonium ion, and maintaining said mixture under crystallization conditions until crystals of said zeolite are formed.

5. Diethyldimethylammonium-containing ZSM-12 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification.

4,552,740

PROCESS FOR PRODUCING AMORPHOUS AND CRYSTALLINE SILICON NITRIDE

Peter E. D. Morgan, Thousand Oaks, and Eloise A. Pugar, Newbury Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1985, Ser. No. 704,979
Int. Cl.[4] C01B *21/068*
U.S. Cl. 423—344 **10 Claims**

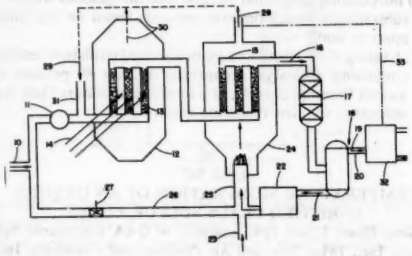
1. A process for producing silicon nitride which comprises reacting silicon disulfide in solid form with ammonia gas at

temperature ranging from about 800° C. to about 1450° C. and recovering amorphous silicon nitride.

4,552,741
METHOD AND APPARATUS FOR MANUFACTURING SYNTHESIS GAS

Eckhard Melchior, Dachau, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 2, 1984, Ser. No. 656,867
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337078
Int. Cl.⁴ C01C *1/04*
U.S. Cl. 423—359 **5 Claims**



1. Method for the manufacture of a synthesis gas comprising hydrogen, through the catalytic steam reforming of hydrocarbons under the influence of heat comprising: passing a mixture of steam and hydrocarbons through two catalytic reforming reactors connected in series under conditions effective to provide synthesis gas wherein the endothermic heat of reaction in the first reactor is provided by solar energy, the endothermic heat of reaction in the second reactor is provided by combustion of the residual products obtained from the synthesis gas generation process, and the steam is generated from the flue gas heat obtained from the combustion of the residual products.

3. Apparatus for the manufacture of a synthesis gas comprising hydrogen through the catalytic steam reforming of hydrocarbons under the influence of heat comprising:

(a) a first catalytic steam reforming retractor,
(b) a second catalytic steam reforming reactor,
(c) means to pass a mixture of steam and hydrocarbons in serial fashion through said first and second reactors to provide synthesis gas,
(d) means to heat said first reactor by solar energy, and
(e) means to heat said second reactor by combustion of residual products from synthesis gas generation.

4,552,742
MATERIALS PROCESSING USING CHEMICALLY DRIVEN SPHERICALLY SYMMETRIC IMPLOSIONS

Frederick J. Mayer, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Oct. 3, 1983, Ser. No. 538,210
Int. Cl.⁴ C01B *31/06*
U.S. Cl. 423—446 **11 Claims**

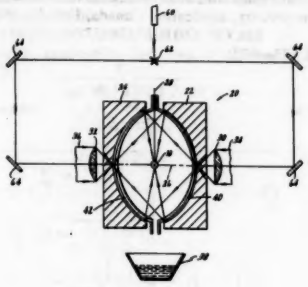
1. A method of implosive compression for obtaining changes of state in materials comprising the steps of:

(a) providing a target which includes a core having quantity of selected material with a spherical outer core surface, and a hollow spherically symmetrical shell of high explosive material concentrically surrounding said core surface and having a spherical outer shell surface concentric with said core surface

obtaining uniform surface ignition at said outer surface of said shell of high explosive material by directing at least one beam of radiant energy onto said target at uniform intensity around said outer shell surface so as to generate spherically symmetrical implosive shock compression of said quantity of material, and

(c) recovering the resulting product.

11. A method for obtaining compression-induced polymorphic transition of graphite to diamond comprising the steps of:

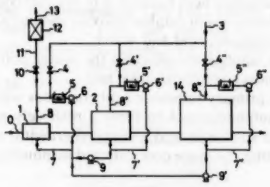


(a) providing a spherical core of graphite,
(b) concentrically surrounding said graphite shell with a shell of high explosive material, and
(c) igniting said shell of high explosive material by directing radiant energy at spherically symmetrical intensity onto said explosive shell.

4,552,743
PROCESS FOR PRODUCING CARBON FIBER

Hajime Torigata; Atsushi Sumida, and Nobuyuki Matsubara, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,535
Claims priority, application Japan, Dec. 22, 1982, 57-223887
Int. Cl.⁴ D01F *9/12*
U.S. Cl. 423—447.7 **9 Claims**

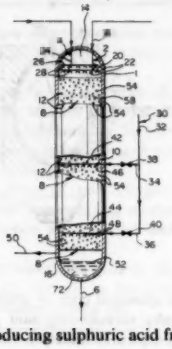


1. A process for producing carbon fiber comprising a preoxidation step in which precursor fibers are heated in an oxidizing atmosphere of about 200° to 250° C. to convert them into partially oxidized fibers with a water retention of 1 to 3% by weight, an oxidation step in which the partially oxidized fibers are heated in an oxidizing atmosphere to convert them into oxidized fibers, and a carbonization step in which the oxidized fibers obtained in said oxidation step are further heated in an inert atmosphere to convert them into carbonized fibers, wherein part or the whole of the exhaust gas from the oxidation step (oxidation exhaust gas) is supplied into said preoxidation step as the oxidizing gas for said preoxidation treatment, and the exhaust gas from said preoxidation step is subjected to a burning treatment.

4,552,744
PROCESS FOR THE PRODUCTION OF SULFURIC ACID USING COATED CATALYSTS

Karl T. Chuang, and David R. P. Thatcher, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Chalk River, Canada

Filed Jul. 30, 1984, Ser. No. 635,626
Claims priority, application Canada, Feb. 10, 1984, 447230
Int. Cl.[4] C01B *17/74, 17/98, 17/48*
U.S. Cl. 423—522 **7 Claims**



1. A method of producing sulphuric acid from sulphur dioxide, comprising:

(a) simultaneously contacting fluid streams in the form of gaseous sulphur dioxide and oxygen and liquid, primary sulphuric acid and water, and a catalyst assembly in the path of the contacting fluids, said fluid and said catalyst assembly being contacted at a process temperature in the range 150° to 280° C., the catalyst assembly comprising at least one high surface area, non-combustible, sulphuric acid resistant, catalyst support and an outer, porous membrane coating on the said at least one support and consisting of a process temperature and sulphuric acid resistant gas permeable, water repellent, gaseous sulphur dioxide and oxygen gas permeable, high molecular weight, organic, polymeric material which is polytetrafluoroethylene and crystallites of at least one catalytically active metal selected from Group VIII of the Periodic Table, with the crystallites dispersed on the porous support in the polymeric material, so that:

(i) gaseous sulphur dioxide and oxygen are catalytically combined to form sulphur trioxide,

(ii) exothermic heat generated in the catalyst assembly by the formation of sulphur trioxide therein is dissipated by the sulphuric acid and water,

(iii) the sulphur trioxide and the water combine to form secondary sulphuric acid, and

(iv) the primary sulphuric acid combines with the secondary sulphuric acid to form a relatively more concentrated sulphuric acid solution therewith, and then

(b) collecting the more concentrated sulphuric acid solution.

4,552,745
Patent Not Issued For This Number

4,552,746
PROCESS FOR THE REDUCTION OF THE SULFUR CONTENT IN A GASEOUS STREAM

Roland Kettner, Lehmweg 12, 2081 Heist; Norbert Liermann, Am Lerchenberg 17, 3103 Bergen 2, and Torsten Lübcke, Otternweg 2, 3101 Hambühren II, all of Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,832
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1981, 3143400
Int. Cl.[4] C01B *17/02*
U.S. Cl. 423—573 G **12 Claims**

1. A process for the reduction of sulfur content in a gaseous stream with the production of elemental sulfur, comprising the steps of:

(a) treating the gaseous stream by at least one of hydrogenation and hydrolysis to convert substantially all of the sulfur components therein to hydrogen sulfide;

(b) then reducing the water content of the gaseous stream to less than 10 volume percent;

(c) introducing oxygen into the gaseous stream;

(d) treating the gaseous stream in a first oxidation reactor, containing a catalyst comprising at least 80 percent by weight titanium dioxide, at a temperature of about 200° C. to 270° C. wherein substantial conversion of H_2S to elemental sulfur occurs;

(e) cooling the product gas to a temperature of 120°–140° C. to separate elemental sulfur by condensation;

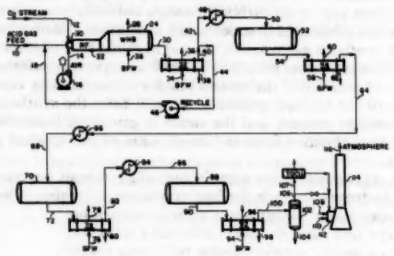
(f) introducing additional oxygen into the gaseous stream in substantially stoichiometric amounts based on the sulfur content; and

(g) treating the gaseous stream in a second oxidation reactor, containing a catalyst comprising at least 80 percent by weight titanium dioxide, at a lower temperature than that utilized in the first oxidation reactor.

4,552,747
TEMPERATURE MODERATION OF AN OXYGEN ENRICHED CLAUS SULFUR PLANT

B. Gene Goar, Tyler, Tex., assignor to GAA Engineered Systems, Inc., Tyler, Tex. and Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 20, 1984, Ser. No. 622,433
Int. Cl.[4] C01B *17/02*
U.S. Cl. 423—574 R **12 Claims**



1. In a process for recovering sulfur from a feed gas stream rich in hydrogen sulfide wherein the gas stream is partially combusted with an oxygen-enriched gas in a Claus reaction furnace zone, the combustion effluent is cooled with the attendant condensation and separation of sulfur in a first condensation zone and the remaining effluent stream is passed through at least one stage of reheating, conversion in a catalytic Claus reaction zone and cooling with attendant condensation and separation of sulfur in an additional condensation zone, the improvement comprising recycling a portion of the reacted effluent stream from the first condensation zone to the reaction furnace zone in order to moderate the temperature of the reaction furnace zone.

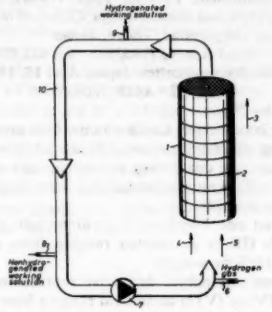
4,552,748
METHOD IN THE PRODUCTION OF HYDROGEN PEROXIDE

Carl T. Berglin, Alafors, and Wolfgang Herrmann, Gothenburg, both of Sweden, assignors to EKA AB, Surte, Sweden

Filed Sep. 6, 1983, Ser. No. 529,730
Claims priority, application Sweden, Sep. 8, 1982, 8205093
Int. Cl.[4] C01B *15/023*
U.S. Cl. 423—588 **10 Claims**

1. An improved method in the production of hydrogen

peroxide by the alternate reduction and oxidation of alkylated anthraquinones which are dissolved in one or more organic solvents to form a liquid working solution, said working solution being subjected to catalytic hydrogenation in a reactor by contact with hydrogen in the presence of a hydrogenation catalyst, the improvement comprising causing an inflow of the working solution and hydrogen to flow through a fixed cata-



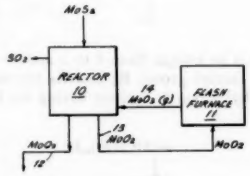
lyst body having thin walls defining a multiplicity of parallel through channels of about equal length to divide said inflow into a multiplicity of partial flows of working solution and hydrogen, the central portions of said through channels generally permitting unimpeded flow, the hydrogenation catalyst being attached to said walls, whereby the contact time of the working solution and the hydrogen with the catalyst body for said partial flows is approximately equal.

4,552,749

PROCESS FOR THE PRODUCTION OF MOLYBDENUM DIOXIDE

Lawrence F. McHugh, Fairfield, Conn.; Dale K. Huggins; Malcolm T. Hepworth, both of Golden, Colo., and John M. Lafferty, Wheat Ridge, Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 11, 1985, Ser. No. 690,708
Int. Cl.⁴ C01G *39/02*
U.S. Cl. 423—606 **16 Claims**



1. A process for converting MoS_2 to MoO_2 which comprises,

feeding MoS_2 in particulate form into a reactor while flowing MoO_3 vapor therein to effect reaction thereof with said MoS_2 to form MoO_2,

the temperature in said reactor being maintained at a level sufficient to carry out the reaction,

selectively removing from said reactor a portion of said MoO_2 as a product,

selectively oxidizing the remainder of said MoO_2 at a temperature sufficient to generate gaseous MoO_3,

and causing said generated gaseous MoO_3 to flow in said reactor relative to the flow of MoS_2 therein to convert said MoS_2 to MoO_2,

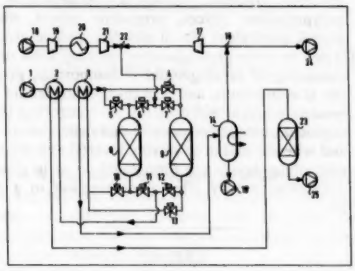
the amount of MoO_3 being at least stoichiometrically sufficient to react with substantially all of the MoS_2.

4,552,750

PROCESS FOR THE REACTION OF CARBON MONOXIDE WITH STEAM, WITH FORMATION OF CARBON DIOXIDE AND HYDROGEN AND USE OF A CATALYST FOR THIS PURPOSE

Willem J. J. van der Wal, Utrecht, and John W. Geus, Bilthoven, both of Netherlands, assignors to VEG-Gasinstituut N.V., Apeldoorn, Netherlands

Filed Jul. 27, 1983, Ser. No. 517,852
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228482
Int. Cl.⁴ C01B *2/10*
U.S. Cl. 423—656 **14 Claims**



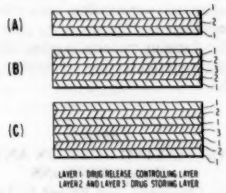
1. A process for conducting the shift reaction which comprises reacting carbon monoxide with steam to form carbon dioxide and hydrogen at elevated temperature in the presence of a catalyst which consists essentially of iron oxide placed on an inert thermostable carrier having a specific surface of more than 10 m^2 per gram, the iron oxide being present on the carrier in a quantity of at least 5% by weight calculated as elementary iron of the iron oxide and related to the weight of the carrier, and at least 20% by weight of the iron oxide present on the carrier being in finely divided form with a particle size of less than 40 nm.

4,552,751

LONG-LASTING MULTI-LAYERED FILM PREPARATION

Kohji Inaba, Neyagawa; Seiei Sasatani, Matsubara; Tatsushi Koide, Fujiidera, and Tamio Nanya, Sakai, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 19, 1981, Ser. No. 312,458
Claims priority, application Japan, Oct. 17, 1980, 55-144503
Int. Cl.⁴ A01N *25/26, 25/34*
U.S. Cl. 424—19 **16 Claims**



1. A multi-layered pharmaceutical film preparation of 3, 5 or 7 layers comprising:

(i) one or more drug storing layer(s) comprising components (A), (C) and (D) as defined below; and

(ii) two or more drug release controlling layers consisting essentially of components (A), (B) and (C) as defined below:

(A) one or more biologically inactive water soluble poly-

mer compounds with an average molecular weight of 10,000–400,000 in an amount of from 10 to 80% by weight of the preparation, wherein said water soluble polymer compounds are selected from the group consisting of hydroxypropyl cellulose, polyvinylpyrrolidone and hydroxypropyl methyl cellulose;

(B) one or more biologically inactive water insoluble polymer compounds with an average degree of polymerization of 100–500, wherein said water insoluble polymer compounds are selected from the group consisting of cellulose acetate and vinyl acetate resin;

(C) one or more biologically inactive plasticizers, wherein said plasticizers are selected from the group consisting of diethyl phthalate, butyl phthalyl butyl glycolate, glycerin, triacetin, tributyrin, polyethylene glycol, polypropylene glycol, propylene glycol, diethylene glycol, triethylene glycol and dipropylene glycol and;

(D) one or more prostaglandins selected from the group consisting of prostaglandin F compounds, prostaglandin E compounds, and 6, 9 thio-prostaglandin I_1 compounds; wherein said drug release controlling layers are disposed on opposite sides of said drug storing layer(s) and wherein said drug storing layer(s) and drug release controlling layers are formulated so as to dissolve or decompose totally after administration to a mucosal site.

4,552,752

MICROBIOCIDAL ARTICLE FOR AQUEOUS SYSTEMS

David R. Amick, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 462,242, Jan. 31, 1983, which is a continuation-in-part of Ser. No. 422,056, Sep. 23, 1982,. This application Jul. 28, 1983, Ser. No. 518,237

Int. Cl.[4] A01N *25/34*

U.S. Cl. 424—21 **21 Claims**

1. A microbiocidal article useful for controlling living microorganisms in an aqueous system comprising:

(a) a porous membrane having a film thickness of from 0.5 mil to about 10 mils and having a pore size smaller than the particle size of the microbiocidal to be employed containing sealed therein:

(b) a particulate, solid isothiazolone microbiocidal composition comprising:

(i) an aqueous solution containing from about 0.1 to about 70 weight %, based on total weight of said composition, of at least one water-soluble isothiazolone microbiocidal, whose water solubility is greater than 1000 ppm, blended with and absorbed in;

(ii) from about 99.9 to about 30 weight %, based on total weight of said composition, of an inert finely-divided water-insoluble solid carrier material selected from silicaceous diatomaceous earth, high water absorption capacity calcium silicate granular material, silicas, clays, charcoal, vermiculite, corn cobs, wood, or polymeric matrices;

wherein the film-forming material is selected from a hydrophobic film-forming material having a solubility parameter of less than about 12.5.

4,552,753

PROCESS FOR MAKING ROLL-ON ANTIPERSPIRANT COMPOSITIONS

Chance R. Elm, Cincinnati, and Erlend R. Lowrey, Greenhills, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 1, 1983, Ser. No. 556,883

Int. Cl.[4] A61K *7/32, 7/34, 7/38*

U.S. Cl. 424—66 **12 Claims**

1. In an improved process for making a stable roll-on antiperspirant composition comprising the steps of preparing a composition comprising one or more volatile silicone oils, one or more non-volatile silicone oils, and an antiperspirant active, and filling a roll-on container with said composition, wherein the improvement comprises the step of deaerating said composition prior to said filling step to exhibit reduced incidence of the creep phenomenon.

4,552,754

HAIR COSMETIC COMPOSITION

Kazuhiro Muramatsu, Yachiyo; Yuuzi Watari, Chiba; Masaru Tajima, Tokyo, and Isamu Nakaju, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,574

Claims priority, application Japan, Apr. 15, 1982, 57-62957

Int. Cl.[4] A61K *7/06, 7/08*

U.S. Cl. 424—70 **11 Claims**

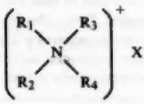
1. A hair conditioning composition which provides a strong conditioning effect and substantially no gelation comprising:

(A) at least one quaternary ammonium salt represented by formula (I) in an amount ranging from about 0.1 to about 10% by weight;

(B) at least one 1-hydroxy-2-pyridone salt represented by formula (II) in an amount ranging from about 0.05 to about 3.0% by weight;

(C) at least one polyol derivative represented by formula (III), (IV) or (V) in an amount ranging from about 0.05 to about 20% by weight; and

(D) a cosmetically acceptable carrier; wherein said formula (I) is:

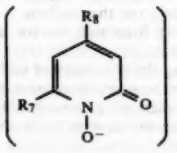


where R_1 is a C_{10}–C_{24} alkyl group, a C_{10}–C_{24} hydroxyalkyl group, or a group having the formula $R'(OCH_2CH_2—_{1-10}$, where R' is a C_{10}–C_{24} alkyl group or a C_{10}–C_{24} hydroxyalkyl group; R_2 is a C_{10}–C_{24} alkyl group, a C_{10}–C_{24} hydroxyalkyl group, benzyl group, a group having the formula $R''(OCH_2CH_2—_{1-10}$ where R'' is a C_{10}–C_{24} alkyl group or a C_{10}–C_{24} hydroxyalkyl group, a C_1–C_3 alkyl group, or a group having the formula

where n is an integer from 1 to 5 and R_5 is a hydrogen atom or methyl group; R_3 and R_4 are independently a C_1–C_3 alkyl group or a group having the formula

where m is an integer from 1 to 5 and R_6 is a hydrogen atom or methyl group; and X is a halogen atom or a C_1–C_2 alkyl sulfate group;

said formula (II) is:



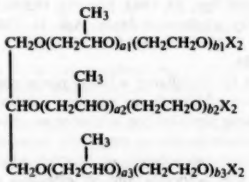
where R_7 is a C_1–C_{17} alkyl group, a C_2–C_{17} alkenyl group, a

C_5–C_8 cyclcoalkyl group, a C_7–C_9 bicycloalkyl group, a C_1–C_4 cycloalkyl-alkyl group where the cycloalkyl residue may optionally be substituted by a C_1–C_4 alkyl group, an aryl group, an aralkyl group containing a C_1–C_4 alkyl group, an arylalkenyl group containing a C_2–C_4 alkenyl group, an aryloxyalkyl group containing a C_1–C_4 alkyl group, an arylmercaptoalkyl group containing a C_1–C_4 alkyl group, a benzhydryl group, a phenylsulfonylalkyl group containing a C_1–C_4 alkyl group, a furyl group, or a furylalkenyl group containing a C_2–C_4 alkenyl group, provided that said aryl residue may optionally be substituted by a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, nitro group, cyano group or a halogen atom;

R_8 is a hydrogen atom, a C_1–C_4 alkyl group, a C_2–C_4 alkenyl group, a C_2–C_4 alkynyl group, a halogen atom, a phenyl group or a benzyl group; and

X_1 is an organic base, an alkali metal, an alkaline earth metal, ammonium group, or a cation of +2 to +4 valence;

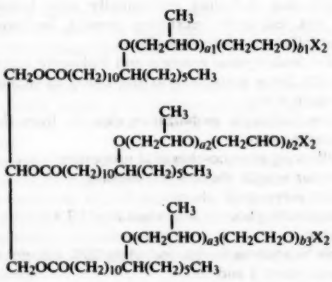
said formula (III) is:



where at least one of X_2 is a pyrrolidone carboxylic acid residue and the remaining X_2 are each independently a hydrogen atom, a higher aliphatic acid residue or a higher hydroxylaliphatic acid residue;

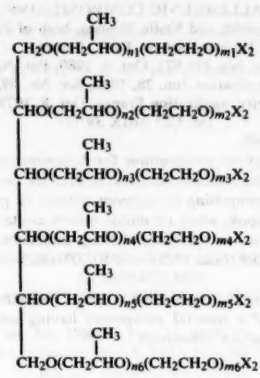
a_1, a_2, a_3, b_1, b_2 and b_3 are the same or different integers and a total sum of $a_1+a_2+a_3+b_1+b_2+b_3$ is an integer between 10 and 70;

said formula (IV) is:



where X_2, a_1, a_2, a_3, b_1, b_2 and b_3 have the same meaning as in formula (III); and

said formula (V) is:



where X_2 has the same meaning as in formula (III) above; m_1, m_2, m_3, m_4, m_5, m_6, n_1, n_2, n_3, n_4, n_5 and n_6 are the same or different integers and a total sum of $m_1+m_2+m_3+m_4+m_5+m_6+n_1+n_2+n_3+n_4+n_5+n_6$ is an integer between 10 and 100.

4,552,755

SUBSTANTIVE MOISTURIZING COMPOSITIONS

Neil A. Randen, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

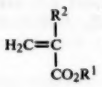
Filed May 18, 1984, Ser. No. 611,730

Int. Cl.[4] A61K *31/78, 47/00*

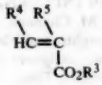
U.S. Cl. 424—81 **6 Claims**

1. A moisturizing composition for application to mammalian skin consisting essentially of an oil-in water emulsion containing:

(a) an oil phase comprising an effective amount of at least one emollient oil and from 0.5 to 20 percent by weight of an acrylate polymer having a solubility parameter of 6 to 10 (cal/cc)$^{\frac{1}{2}}$ in poorly hydrogen-bonding solvents, said polymer being derived from the same or different ester monomers of the formula:



wherein R^1 is an alkyl radical containing 4 to 18 carbon atoms in cyclic, straight- or branched-chain configuration; R^2 is hydrogen or lower alkyl, and up to 30 mole percent of the same or different monomers of the formula:



wherein R^3 is H or an alkyl radical containing 1 to 18 carbon atoms; R^4 is hydrogen, methyl, or $—CO_2R^3$ and R^5 is hydrogen, lower alkyl or $—CH_2CO_2R^3$; provided, that when R^4 is not hydrogen, R^5 is hydrogen, and when R^5 is not hydrogen, R^4 is hydrogen,

(b) about 45 to 95 percent by weight of a water phase, and

(c) an effective amount of an emulsifying agent,

said composition having a substantivity value of at least 30.

4,552,756

ALLERGENIC COMPOSITIONS

Edgar H. Relyveld, and Emile Henocq, both of Paris, France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 194,577, Oct. 6, 1980, Pat. No. 4,350,680. This application Jun. 28, 1982, Ser. No. 392,594

Claims priority, application France, Oct. 8, 1979, 7924948

Int. Cl.[4] A61K *39/00*

U.S. Cl. 424—88 10 Claims

1. An allergenic composition for hyposensitizing allergic patients by intracutaneous administration of the composition to the patients, comprising an aqueous extract of pollen, flour, house dust, kapok, wool or molds which contains only the allergenically active substances having molecular weights in the range of from about 10,000 and 50,000, and being free from enzymes.

4. The composition according to claim 1 which contains an aqueous gel of a mineral compound having adsorbed said allergenically active substances.

4,552,757

USE IN AN ANIMAL HOST AND PRECURSORS FOR VACCINES UTILIZING AVIAN-HUMAN REASSORTANTS TO COMBAT INFLUENZA A VIRUS

Brian R. Murphy; Robert M. Chanock, both of Bethesda, Md.; Robert G. Webster, Memphis, and Virginia S. Hinshaw, Germantown, both of Tenn., assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Dec. 20, 1983, Ser. No. 563,370

Int. Cl.[4] A61K *39/145*

U.S. Cl. 424—89 6 Claims

1. A vaccine for use in animals other than avians derived from an avian-human influenza reassortant virus whose non-surface protein genes are derived from the avian influenza virus A parent and the surface antigen genes are derived from the human influenza virus parent and where at least one of the avian influenza nucleoprotein and matrix protein genes are present in the reassortant, said avian-human influenza reassortant virus selected from one member of the group consisting of A/Washington/80 (H3N2) X A/Mallard/New York/6750/78 (H2N2); A/California/78 (H1N1) X A/Mallard/New York/6750/78 (H2N2); A/Udorn/307/72 X A/Mallard/Alberta/573/78; A/Udorn/307/72 X A/Pintail/Alberta/121/79; and A/Udorn/307/72 X A/Mallard/New York/6750/78 (H2N2).

4,552,758

HUMAN USE OF AVIAN-HUMAN REASSORTANTS AS VACCINES FOR INFLUENZA A VIRUS

Brian R. Murphy; Robert M. Chanock, both of Bethesda, Md.; Robert G. Webster, Memphis, and Virginia S. Hinshaw, Germantown, both of Tenn., assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Dec. 20, 1983, Ser. No. 563,372

Int. Cl.[4] A61K *39/145*

U.S. Cl. 424—89 2 Claims

1. A method of increasing the prevention of influenza A virus in humans which comprises application by intranasal route of an effective amount of $10^{7.0}-10^{8.0}$ $TCID_{50}$ of a reassortant vaccine selected from one member of the group consisting of A/Washington/80 X A/Mallard/New York (H2N2) and A/California/78 X A/Mallard/New York (H2N2).

4,552,759

COMPOSITION FOR THE CONTROL OF COCCIDIOSIS IN POULTRY

Paul J. Davis, and James F. Reynolds, both of Bedfordshire, England, assignors to International Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Continuation of Ser. No. 339,311, Jan. 15, 1982, abandoned, which is a division of Ser. No. 228,479, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 49,070, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 959,984, Nov. 13, 1978, abandoned. This application Apr. 27, 1983, Ser. No. 487,595

Int. Cl.[4] A61K *37/00*

U.S. Cl. 424—93 1 Claim

1. A coccidiosis control composition comprising a feedstuff for poultry which contains from about 6 to about 12 percent by weight moisture and, per kg of nutrient material, from about 10 to 10,000 added viable sporulated oocysts of at least one species of coccidia to which poultry are susceptible.

4,552,760

METHOD FOR STABILIZING TISSUE PLASMINOGEN ACTIVATOR AND A STABLE AQUEOUS SOLUTION OR POWDER CONTAINING THE SAME

Akira Murakami, Tokyo, and Hideo Yoshizaki, Saitama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Kowa Co., Ltd., both of, Japan

Filed Apr. 23, 1984, Ser. No. 603,063

Claims priority, application Japan, Apr. 21, 1983, 58-69230

Int. Cl.[4] C12N *9/50;* A61K *31/715, 35/12, 35/48*

U.S. Cl. 424—94 20 Claims

1. A method for stabilizing a tissue plasminogen activator which comprises adding to an aqueous solution or powder containing a tissue plasminogen activator an effective amount of a purified gelatin having an isoelectric point of 7.0 to 9.0.

13. A stable aqueous solution or powder which contains a tissue plasminogen activator and an effective amount of a purified gelatin having an isoelectric point of 7.0 to 9.0.

4,552,761

METHOD FOR INFLUENCING THE IMMUNE SYSTEMS OF MAMMALS USING LEUKORECRUITIN

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft zur Forderung der/Wissenschaften, Gottingen, Fed. Rep. of Germany

Division of Ser. No. 300,923, Sep. 10, 1981, Pat. No. 4,452,735. This application Apr. 12, 1984, Ser. No. 599,534

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034529

Int. Cl.[4] C07G *7/00*

U.S. Cl. 424—101 8 Claims

1. A method for influencing the immune system of mammals comprising administering an effective amount of a pharmaceutical composition including substantially pure leukocytosis inducing and leukocyte recruiting protein, leukorecruitin, having the following biological effects:

a. positive leukocytosis reaction and leukocyte recruitment from the bone marrow into the blood of animals and humans in vivo;

b. positive leukocyte mobilization directly from the bone marrow in vitro;

and the following physico-chemical properties:

a. molecular weight about 8,500 daltons;

b. a single polypeptide chain;

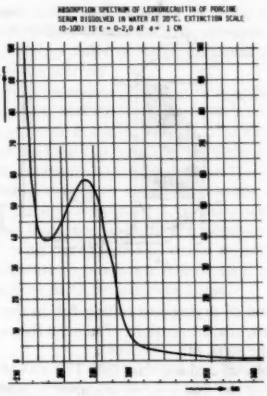
c. anodic electrophoretic migration at pH 7.4 in acrylamide matrices;

d. soluble in aqueous media, including 20% ethanol at pH's between about 4 and 10;

e. insoluble in $(NH_4)_2SO_4$ solutions having concentrations higher than 61%, corresponding to 2.5 mol $(NH_4)_2SO_4$/l;

f. constant temperature coefficient of solubility in ammonium sulfate solutions between −10° C. and +50° C.;

g. crystallizes in the form of double-refractive, optionally anisotopic crystals from ammonium sulfate solutions at ammonium sulfate concentrations higher than 61%;
h. insoluble in chloroform, benzene, xylene and other apolar non-aqueous and water-immiscible solvents;
i. denatures in chloroform, benzene and xylene resulting in destruction of conformational structure and loss of biological activity;



j. contains tyrosine, tryptophan, phenylalanine, alanine, glycine, lysine, serine, valine, glutamic acid, arginine, and leucine;
k. adsorbs reversibily on anion and cation exchangers, calcium phosphate gels and hydroxyapatite and is capable in native form of volume-partition chromatography; and
l. possesses extinction coefficients according to Table I:

TABLE I

Wavelength, nm	$E^{1mg/ml}_{1cm}$(H_2O,20° C.) ± 6%
250 (min.)	0.36
260	0.42
277 (max.)	0.54
280	0.53
290	0.32
400–1000	0
E_{280}/E_{260}	1.26

and wherein said protein is substantially free of the following biologic properties:
a. increase of capillary permeability in the skin;
b. spasmogenic activity on smooth muscles;
c. spasmogenic activity on striated muscles;
d. significant endotoxin content or effects in animals and humans identical with or similar to those of endotoxins;
e. chemo attraction or chemotaxis of leukocytes in vitro;
f. positive or negative chemokinetic activity on leukocytes in vitro;
g. phagocytosis stimulating activity on leukocytes in vitro;
h. apparent shock or other detrimental systemic effect of immediate or protracted type in animals and humans in vivo;
i. pyrogenic activity in anaimals and humans in vivo;
j. lysis effects alone or in the presence of plasma or serum on erythrocytes, thrombocytes, and luekocytes in vitro;
k. phlogistic action in situ at reation sites of formation or application of leukorecruitin;
i. blood clot including activity alone or in presence of plasma;
m. aggregation of erythrocytes, thrombocytes and leukocytes alone, in salt solutions or in presence of plasma;
n. mitogenic activity on leukocytes in spleen, blood or bone marrow;
o. mitogenic activity on endothelial cells of arterial vessels in vivo and in vitro;
p. induction of vascularization of corneal tissues by chemotropism;
g. chalone activity on leukocytes in spleen and bone marrow; and
r. chalone activity on endothelia cells of arterial vessels.

4,552,762

METHODS OF PREPARING AN ARTHRITIS COMPOSITION

Juanita Nepon, 21640 Twelve Mile Rd., St. Clair Shores, Mich. 48081

Division of Ser. No. 190,457, Sep. 24, 1980, Pat. No. 4,436,723. This application Dec. 8, 1983, Ser. No. 537,091
Int. Cl.[4] A61K *35/407, 35/32*
U.S. Cl. 424—106 **18 Claims**

1. A method for preparing a composition comprising edible bone meal and desiccated liver, wherein said edible bone meal comprises cattle bone meal including red bone marrow, and said desiccated liver comprises beef liver, comprising the steps of:

combining said edible bone meal with red bone marrow and said desiccated beef liver;
mixing the dry mixture with water so as to form a paste;
forming said paste into individual tablet-shaped portions; and
drying said tablets.

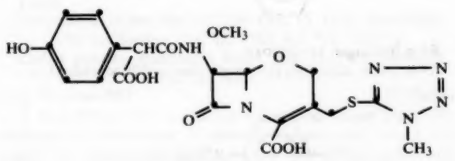
4,552,763

SYNERGISTIC ANTIBACTERIAL COMPOSITIONS AND METHOD OF TREATMENT OF INFECTIONS CAUSED BY MULTIPLE ANTIBIOTIC-RESISTANT ORGANISMS

Gordon L. Brier, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 332,774, Dec. 21, 1981, Pat. No. 4,452,778, which is a continuation-in-part of Ser. No. 135,390, Mar. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 36,263, May 4, 1979, abandoned. This application Jan. 27, 1984, Ser. No. 574,441
Int. Cl.[4] A61K *35/00*
U.S. Cl. 424—114 **8 Claims**

1. A method of treating infections caused by multiple-antibiotic-resistant gram-negative organisms in a warm-blooded animal which comprises administering to said animal a 1-oxa antibiotic compound of the formula



or a pharmaceutically acceptable salt thereof in an amount sufficient to produce blood levels of said compound in said animal of at least about 0.12 to about 16 mcg/ml; and administering in conjunction with said 1-oxa antibiotic amikacin in an amount sufficient to produce blood levels of amikacin in said animal of between about 0.5 mcg/ml and about 8 mcg/ml.

4,552,764

PEPTIDES FOR CONTROL OF INTESTINAL MOTILITY

Irving Goodman, and Robert B. Hiatt, both of New York, N.Y., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 488,631, Apr. 26, 1983, abandoned, which is a continuation of Ser. No. 307,638, Oct. 1, 1981, abandoned, which is a continuation of Ser. No. 175,325, Aug. 4, 1981, abandoned, which is a continuation of Ser. No. 1,473, Jan. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 935,598, Aug. 31, 1979, abandoned, which is a continuation of Ser. No. 881,819, Feb. 27, 1978, abandoned, which is a continuation of Ser. No. 787,141, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 627,777, Oct. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,806, Nov. 14, 1974, abandoned. This application Feb. 6, 1984, Ser. No. 577,450

Int. Cl.[4] C07G *7/00;* C07C *103/52*

U.S. Cl. 514—2 3 Claims

1. Coherin A_1 which is a thermally stable peptide characterized as containing aspartic acid, serine, glutamic acid, proline, glycine, alanine, and leucine, in a mole ratio of 1:1, soluble in water, slightly soluble in absolute ethanol and insoluble in acetone, having a molecular weight of from 600 to 1000, having a λ maximum of 270 nm of pH 3.5 with a corresponding minimum at 258 nm in the ultraviolet region of the spectrum, having the ability to control intestinal motility and the pharmaceutically acceptable salts thereof.

4,552,765

ALETHEINE DERIVATIVES

Itaru Mita, Ashiya; Jun-ichi Iwao, Takarazuka; Tadashi Iso, Sakai, and Masayuki Oya, Ibaraki, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

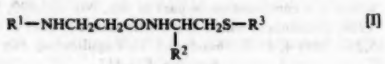
Filed Apr. 25, 1983, Ser. No. 488,100

Claims priority, application Japan, May 14, 1982, 57-82155; Oct. 20, 1982, 57-185026; Nov. 15, 1982, 57-200934

Int. Cl.[4] C07C *103/127*

U.S. Cl. 514—513 15 Claims

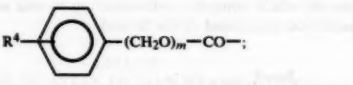
1. A compound of the formula [i] and salts thereof,



[I]

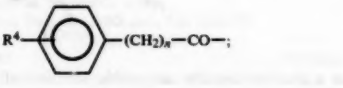
wherein

R^1 is



R^2 is hydrogen or carboxy;

R^3 is lower alkanoyl, (lower alkylamino)thiocarbonyl or



R^4 is hydrogen, lower alkyl or lower alkoxy; and

m and n, are the same or different, each is 0 or 1, said lower alkyl and lower alkoxy refer to groups having 1 to 6 carbon atoms, and lower alkanoyl refers to groups having 2 to 6 carbon atoms.

4,552,766

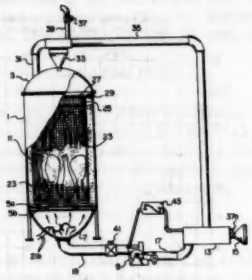
METHOD OF DRYING AND SALTING FISH

Marcel Ducharme, New Glasgow, Canada, assignor to Inno-Tech Developments Ltd., Ottawa, Canada

Filed Jul. 7, 1982, Ser. No. 396,116

Int. Cl.[4] A23B *4/02;* F26B *3/00*

U.S. Cl. 426—294 19 Claims



1. A method of drying and salting fish in the form of split fish, fish fillets, shaped portions of minced fish, or whole fish, comprising the steps of:

(a) washing and draining said fish;

(b) wrapping the fish in fabric material permeable to water;

(c) arranging said fish with suitably exposed surfaces one next to another in two or more apertured enclosures;

(d) establishing a fluidized bed of salt particles in a gaseous working fluid within a chamber operative to receive successively at one end thereof a series of said apertured enclosures for vertical suspension within said fluidized bed, said chamber being provided along its interior with means for horizontally advancing apertured enclosures suspended within said chamber through said fluidized bed to the other end of said chamber, where said apertured enclosures are successively removed;

(e) suspending a first apertured enclosure containing wrapped fish within said chamber at one end thereof so that salt particles within a fluidized bed of salt particles can impinge on a substantial portion of the surface of said wrapped fish in said last-mentioned apertured enclosure when such enclosure holding said wrapped fish is immersed within said fluidized salt bed and advancing said enclosure through said chamber sufficiently to permit the suspension of a second apertured enclosure;

(f) suspending a second apertured enclosure within said chamber at said one end thereof so that salt particles within a fluidized bed of salt particles can impinge on a substantial portion of the surface of said wrapped fish in said last-mentioned apertured enclosure when such enclosure holding said wrapped fish is immersed within said fluidized salt bed and continuing with the advancement of enclosures through said fluidized salt bed to the other end of said chamber and the introduction of subsequent apertured enclosures into said one end of said chamber until said chamber is fully charged with apertured enclosures of wrapped fish;

(g) maintaining said enclosures within said chamber until the desired degree of treatment of the fish within said first apertured enclosure has been achieved.

(h) removing said first enclosure and advancing the remaining enclosures suspended within the chamber one position towards said other end thereof;

(i) successively removing apertured enclosures from the chamber in the order of their introduction into said chamber by repeated steps similar to step (h), so that each enclosure of wrapped fish has undergone a similar degree of treatment within said fluidized salt bed.

4,552,767

METHOD OF PACKAGING COFFEE WITH CARBON DIOXIDE SORBENT

Fouad Z. Saleeb, and Bary L. Zeller, both of Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 27, 1984, Ser. No. 655,194
Int. Cl.[4] B65B *31/02*; B65D *77/24, 81/20, 90/32*
U.S. Cl. 426—395 10 Claims

1. A process for packaging roasted coffee which comprises:

packaging said coffee in a container by either backflushing roasted coffee in a container with nitrogen or vacuum packaging roasted coffee to remove substantially all of the oxygen present therein;

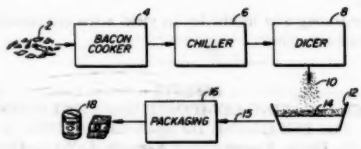
adding to said container containing said coffee a carbon dioxide sorbent, said carbon dioxide sorbent comprising calcium hydroxide at a level of from 70 to 95% by weight based upon the total dry weight of the sorbent and sodium hydroxide, potassium hydroxide or admixture thereof at a level of from 5 to 15% by weight based upon the total dry weight of the sorbent and 1.5% or less water by weight said sorbent being prepared by dry-blending the calcium hydroxide with the sodium hydroxide, potassium hydroxide or admixture to produce a free-flowing material containing sorbent particles less than 1 mm.

4,552,768

BACON BIT FINISHING METHOD

John W. Olander, Diablo, Calif., assignor to Westland Foods Corporation, Concord, Calif.

Filed Mar. 26, 1984, Ser. No. 593,343
Int. Cl.[4] A22C *0/00*
U.S. Cl. 426—480 6 Claims



1. A bacon bit finishing process comprising the following steps:

providing cooked bacon bits at a temperature below about 20° F., said bacon bits comprising larger pieces and smaller fines; and

vibrating said bacon bits sufficiently to dislodge the fines from the pieces and to remove sharp edges from the pieces without substantially separating the two.

4,552,769

COLD SOLUBLE TEA

Tito L. Lunder, and Corine M. Nielsen, both of Lausanne, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Apr. 1, 1985, Ser. No. 718,165
Int. Cl.[4] A23F *3/20*
U.S. Cl. 426—435 4 Claims

1. A process for preparing a powdered tea extract characterised in that black tea leaves are extracted with hot-water to give a first extract which is separated from the tea leaves, concentrated to a solids content of from 5% to 12.5%, and then cooled to a temperature from 5° C. to 15° C. to form an insoluble cream which is separated from the concentrated first extract and then extracted with water at a temperature of from 40° C. to 70° C. to give a second extract which is separated from the remaining insoluble cream, after which the first and second extracts are mixed and dried.

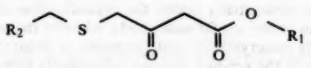
4,552,770

FLAVORING WITH 4(HYDROCARBYLTHIO)ACETOACETIC ESTERS

Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 589,575, Mar. 14, 1984, Pat. No. 4,521,613.
This application Feb. 6, 1985, Ser. No. 698,843
Int. Cl.[4] A23L *1/226, 1/235*
U.S. Cl. 426—535 9 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff an aroma or taste augmenting or enhancing quantity in an amount of about 0.2 parts per million up to about 150 parts per million of at least one 4(hydrocarbylthio)acetoacetic ester having the structure:



wherein R_1 represents C_2–C_6 aliphatic hydrocarbyl and R_2 represents hydrogen or C_1–C_2 aliphatic hydrocarbyl.

4,552,771

ACESULFAM-CONTAINING COMPOSITION TABLETS ON THE BASIS THEREOF AND PROCESS FOR THE MANUFACTURE OF THESE TABLETS

Werner Fülberth, Kelkheim; Alfred Sickmüller, Frankfurt am Main, and Willi Stammberger, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 348,966, Feb. 16, 1982, abandoned.
This application Nov. 21, 1983, Ser. No. 554,163
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105813
Int. Cl.[4] A23L *1/236*
U.S. Cl. 426—548 10 Claims

1. A composition for a sweetening tablet, which comprises acesulfam or a physiological salt thereof as a sweetening agent, a water-soluble CO_2-yielding compound to provide effervescence and from 0.6 to 2 weight % of gelatin powder as dry binder.

4,552,772

PROCESS FOR PREPARING BOILED NOODLES

Hiroshi Saitoh; Katsuyuki Kadooka; Mamoru Tsukamoto, all of Utsunomiya; Shoji Ono, Tatebayashi, and Masaki Ohkawa, Tokyo, all of Japan, assignors to Ma-Ma Macaroni Co., Ltd., Japan

Continuation of Ser. No. 312,259, Oct. 13, 1981, abandoned.
This application Aug. 15, 1983, Ser. No. 523,892
Claims priority, application Japan, Jun. 12, 1981, 56-91424
Int. Cl.[4] A23L *1/16*
U.S. Cl. 426—557 17 Claims

1. In a process for preparing wheat-flour based pastas for commercial distribution at ambient temperatures which are ready for rapid cooking, comprising boiling said pastas and washing said boiled pastas with water, the improvement which comprises immersing the boiled pastas in an aqueous solution containing (a) at least one of citric acid and lactic acid and (b) table salt, then packaging and heat sterilizing the pastas which have been immersed, said aqueous solution having a pH such that the pH of the boiled pastas, after immersion, is about 3.9 to about 4.3.

4,552,773

FREEZER STABLE WHIPPED ICE CREAM AND MILK SHAKE FOOD PRODUCTS

Marvin L. Kahn, Williamsville, and Robert J. Lynch, Buffalo, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 439,129, Nov. 2, 1982, Pat. No. 4,421,778. This application Sep. 6, 1983, Ser. No. 529,766
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.[4] A23G *9/02*
U.S. Cl. 426—564 **58 Claims**

1. A whipped food product comprised of an oil-in-water emulsion of nonfat milk solids, water, sugar in a ratio to water of about 1:1.75 to about 3.0, said sugar being comprised of at least about 30% fructose and/or dextrose; fat, wherein said fat includes a solid beta phase-tending crystalline fat, and minor, effective amounts of flavoring, emulsifier, and stabilizer, wherein the stabilizer comprises a polysaccharide stabilizer effective to substantially inhibit the crystallization of the lactose present in the nonfat milk solids, wherein the product is substantially noncrystalline and spoonable at about 0° F., and the volume of the product remains substantially constant during storage at about 0° F. for at least about six months.

4,552,774

CHEESE-LIKE PRODUCT

Dennis I. Gronfor, Coon Rapids, Minn., assignor to Land O'-Lakes, Inc., Arden Hills, Minn.

Filed Nov. 14, 1983, Ser. No. 551,095
Int. Cl.[4] A23C *21/06, 21/08*
U.S. Cl. 426—582 **30 Claims**

1. A process for producing a cheese-like product comprising:

mixing cheese particles with a composition containing water, milk solids and functional whey protein along with a starch, the starch being added up to 10% of the weight of the entire mixture;

heating the mixture to a temperature range between approximately 140° F. and 190 ° F.;

holding the mixture between 140° F. and 190° F., until the starch and the functional whey protein react with the water and the cheese particles melt within the starch and functional whey protein to form a starch/whey protein matrix containing cheese particles;

processing the matrix containing cheese particles after the starch/whey protein matrix is formed to reduce in size the cheese particles to an approximate size range between 5 and 325 microns.

4,552,775

PROCESS FOR THE PRODUCTION OF ANIMAL FEED STUFF FROM A LIQUID RESIDUE OBTAINED BY FERMENTATION AND DISTILLATION OF GRAIN RAW MATERIAL

Peter Baeling, Ekero, and Lars Ehnstrom, Tullinge, both of Sweden, assignors to Alfa-Laval AB and Svenska Lantmännens Riksförbund, Förening u.p.a, both of, Sweden, by said Lars Ehnstrom

PCT No. PCT/SE82/00199, § 371 Date Feb. 28, 1983, § 102(e) Date Feb. 28, 1983, PCT Pub. No. WO83/00007, PCT Pub. Date Jan. 6, 1983
PCT Filed Jun. 7, 1982, Ser. No. 474,635
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—624 **7 Claims**

1. A process for producing high quality animal feed by the thermal dewatering of a liquid residue obtained by fermentation of grain and distillation of the fermentation product consisting essentially of mixing said liquid residue with recirculated pulverized dried product, granulating the mixture so obtained to form wet granules containing 50 to 70% by weight dry substance, a major part of said granules having a particle size of 2–6 mm. and drying the wet granules by conveying them as a porous bed in a controlled path, in contact with a drying gas having a temperature not greater than 100° C. whereby waste heat gas may be employed, said drying gas having a velocity less than that required for fluidizing said granules, discharging a first portion of said granules from said bed to provide a feed having improved nutritional value, disintegrating a second portion of said granules from said bed and recirculating said disintegrated portion to said initial mixing step.

4,552,776

PROCESS FOR PREPARATION OF TEA COLOR CONCENTRATE AND PRODUCT

Hing-Cheung Tse, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 509,267, Jun. 29, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 685,095
Int. Cl.[4] A23F *3/30*
U.S. Cl. 426—597 **17 Claims**

1. A process for preparation of a tea concentrate of enhanced color and having a pH of about 1.5 to about 3.0 comprising:

(a) heating a solution of one or more reducing sugars and acid to a temperature of from about 220° F. (104° C.) to about 300° F. (149° C.) for about 15 minutes, the ratio of acid to reducing sugar is from about 1:0.5 to about 1:5;

(b) adding soluble tea solids to the solution and heating the resulting mixture to a temperature of from about 280° F. (138° C.) to about 360° F. (182° C.) for about 30 minutes, the ratio of tea solids to reducing sugars is from about 1:6 to about 1:75;

(c) adding water to the mixture and maintaining the resulting mixture at a temperature of from about 170° F. (77° C.) to about 210° F. (99° C.) for about 45 minutes, the ratio of water to reducing sugars is from about 1:3 to about 3:1; and

(d) separating any insolubles to yield a tea concentrate of enhanced color.

4,552,777

CARPET TREATING COMPOSITIONS CONTAINING A POLYSILOXANE TO REDUCE CAKING

Stephen V. Dente, Emerson, and Kenneth J. Ward, Dumont, both of N.J., assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Nov. 8, 1984, Ser. No. 669,506
Int. Cl.[4] C11D *7/12, 7/60, 17/06*
U.S. Cl. 427—393.1 **20 Claims**

1. A powdered carpet-treating composition comprising a blend of from about 40.0–98.94%, by weight, of an inorganic salt carrier selected from the group consisting of sulfates, chlorides, carbonates, bicarbonates, borates, citrates, phosphates, nitrates and blends thereof, substantially all of the particles of said carrier being between 0.06–0.25 millimeters; from about 1.0–25.0%, by weight, of an agglomerating agent; from about 0–15.0% by weight, of an antistatic agent; from about 0.01–18.0%, by weight, of a volatile odorous agent; and from about 0.5–2.0% by weight, of a polysiloxane.

4,552,778

METHOD OF AND APPARATUS FOR APPLYING A VISCOUS MEDIUM TO A SUBSTRATE

Johannes Zimmer, Ebentaler Strasse 133, A-9020 Klagenfurt, Austria

Filed May 25, 1984, Ser. No. 614,417
Claims priority, application Austria, May 25, 1983, 1911/83
Int. Cl.[4] B05D *1/26, 3/12;* **B05C** *3/04, 11/10*
U.S. Cl. 427—445 **17 Claims**

1. A method of applying a viscous medium to a continuously moving wide substrate, comprising the steps of:

pressurizing said medium to an elevated first pressure in a first pressure stage;

delivering said medium at an elevated pressure of said first pressure stage to a distribution chamber extending across the width of said substrate;

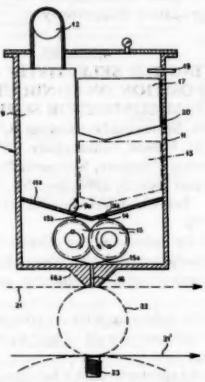
admitting said medium from said distribution chamber into a compartment maintained at a second pressure less than said first pressure in a second pressure stage over the width of said substrate;

withdrawing said medium from said compartment at said second pressure and pressurizing it to a higher third pressure in third pressure stage; and

dispensing the medium at said third pressure over the width of said substrate for application thereto, said first, second and third pressures being adjustable independently of one another.

6. An apparatus for applying a viscous flowable medium to a continuously moving wide substrate, said apparatus comprising:

means defining a first pressure stage for pressurizing said medium to a first pressure;



an elongated distributing device extending across said substrate and having a distributing chamber connected to said first pressure stage for receiving said medium therefrom and distributing said medium over the entire width of said substrate;

a compartment receiving said medium from said distributing chamber in said distributing device and extending across the entire width of said substrate for maintaining said medium at a second pressure less than said first pressure and constituting a second pressure stage, said second pressure being controlled by means for applying a force to the top of a column of said medium in said compartment; and

a pressure generator on said device for receiving said medium from said compartment over the entire width of said substrate for pressurizing said medium to a third pressure higher than said second pressure for discharging said medium at said third pressure from said device onto said substrate.

4,552,779

PROCESS FOR PREPARING A CAST METAL SURFACE STRUCTURE FOR BONDING TO A TOOTH STRUCTURE AND MATERIAL USED THEREWITH

Scott G. McClure, Fallbrook, Calif., assignor to Douglass B. Roberts, Loma Linda, Calif., a part interest

Filed Nov. 28, 1983, Ser. No. 555,644

Int. Cl.[4] A01N *1/02;* **C09K** *3/00;* **A61C** *13/22*

U.S. Cl. 427—2 **7 Claims**

1. The method of preparing a metal surface of a cast metal appliance having a multiplicity of voids which can be filled with a bonding medium for attachment of said metal surface to a tooth surface comprising:

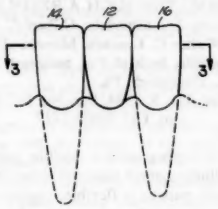
making an impression of a patient's mouth;

making a cast from said impression;

placing an adhesive which is soluble in a predetermined fluid on the cast of a tooth;

placing particles, a portion of which are soluble in said fluid, into the adhesive medium and imbedding the particles therein;

flowing a wax or resin over the resultant surface to imbed said particles therein;



dissolving out the adhesive and any soluble particles leaving voids in the pattern utilizing said fluid;

duplicating the voids with casting investment material which is flowed or poured around the wax or resin pattern;

burning or melting the pattern out of the casting investment;

pouring molten metal into the investment; and

removing the casting investment material from the said metal surface.

4,552,780

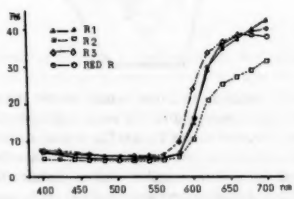
MULTI-LAYER COATING METHOD BASED ON DIFFERENTIAL SPECTRAL REFLECTANCE

Yoshiaki Abe, 12-352 Yuden, Iseda-cho, Uji-shi, Kyoto-fu, and Masaaki Koyama, 8-5, Ishiki-cho, 2-chome, Kariya-shi, Aichi-ken, both of Japan

Filed Sep. 27, 1983, Ser. No. 536,762

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—8 **1 Claim**



1. In a method for forming a highly chromatic, multi-layer colored coating of a red Munsell renotation hue R series, a yellow Munsell renotation hue Y series or an orange Munsell renotation hue YR color series comprising applying over a colored intercoat, under incomplete hiding conditions, a low hiding top coat so as to give a color difference of less than 1.0 as compared with the case in which the top coat is applied under complete hiding conditions, the improvement, wherein the intercoat color is selected so as to fulfill the requirement;

$$\Sigma|\Delta R\lambda| \leqq 0.5$$

wherein $\Sigma|\Delta R\lambda|$ stands for the summation of absolute values of $\Delta R\lambda$, and $\Delta R\lambda$ is the differential between the spectral reflectance ($RM\lambda$) of the top coat applied at complete hiding and spectral reflectance ($RG\lambda$) of the intercoat applied at complete hiding at the respective wavelength (λ) at intervals of 20 nm in the selected wavelength region ranging from the point at which the reflectance difference at the same wavelength in the spectral reflectance curves over the white and black substrates of a JIS contrast chart of the top coat applied at incomplete hiding and at a defined film thickness is more that 1% to a

maximum of 700 nm, and whereby the reflectance curves of the complete hiding top coat and of the complete hiding intercoat are approximately near each other in the above said selected wavelength region only.

4,552,781

METHOD UTILIZING ULTRASONICALLY INDUCED CAVITATION TO IMPREGNATE POROUS SHEET PASSING THROUGH A RESIN BATH

Daniel L. Cannady, Jr., Allendale; Gilbert G. Berg, Hampton, both of S.C.; Walter C. Leschek, Monroeville, and Joseph F. Meier, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

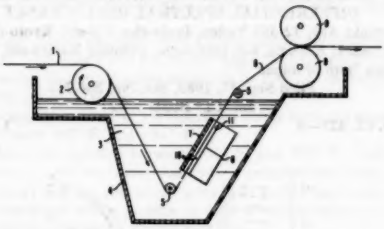
Filed Apr. 9, 1984, Ser. No. 597,869

Int. Cl.⁴ B05D *3/12*

U.S. Cl. 427—57 **6 Claims**

1. A method of impregnating a flexible, porous, thick, high basis weight, cellulosic sheet material comprising the steps:

(1) continuously passing a flexible, porous cellulosic sheet material, having a basis weight of over about 150 lbs./3,000 sq. ft. and a thickness of over about 10 mils, at a rate of speed of from about 350 feet/minute to about 800 feet/minute, through a bath of liquid, organic, "B"-stageable impregnating resin, having a viscosity of from about 10 cps. to about 750 cps. at 25° C., and through a cavitated zone in close proximity to the resonant vibrating surface of at least one ultrasonic wave generator, said cellulosic sheet material passing from about ¼ inch to about 6 inches away from the surface of the ultrasonic wave generator, where a differential length of the cellulosic sheet has a dwell time in the resin bath of from about 0.2 second to



about 1 second, said ultrasonic wave generator being completely immersed in the resin and operating at a frequency of over about 10,000 Hz and at a radiated power level effective to provide a combination vibratory pressure on the resin molecules, and cavitation effect causing degassing and microstreaming of the resin, and heating of the resin within the cavitated zone along the width of the passing sheet, said heating causing a lowering of the resin viscosity, said combination of vibratory pressure and cavitation degassing and microstreaming effect causing resin impregnation throughout the void volume of the cellulosic sheet; and

(2) passing the resin impregnated sheet through a drying means to "B"-stage the resin.

4,552,782

ELECTROLUMINESCENT DEVICE

Alan F. Cattell; John Kirton, both of Malvern, and Peter Lloyd, Great Malvern, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

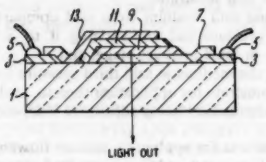
Filed Jul. 26, 1984, Ser. No. 634,497

Claims priority, application United Kingdom, Jul. 29, 1983, 8320557

Int. Cl.⁴ B05D *3/02, 5/12*

U.S. Cl. 427—66 **13 Claims**

1. A method of electroluminescent panel manufacture in which a doped zinc chalcogenide phosphor film is deposited upon the surface of a transparent electrode bearing substrate, wherein this deposition is performed in an hydrogen enriched atmosphere, and following the deposition of the film, the film bearing substrate is heated rapidly to an elevated temperature



of at least 450° C. in a non-reactive environment, and, immediately upon such temperature being reached, is cooled at a rate intermediate to those which would cause thermal shock and brightness degradation respectively.

4,552,783

ENHANCING THE SELECTIVITY OF TUNGSTEN DEPOSITION ON CONDUCTOR AND SEMICONDUCTOR SURFACES

Robert W. Stoll, Schenectady; Michael R. MacLaury, Rexford, and Ronald H. Wilson, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,454

Int. Cl.⁴ H01L *21/285, 21/302*

U.S. Cl. 427—91 **20 Claims**

1. A method for enhancing the selective vapor deposition of tungsten on conductor and semiconductor surfaces of a substrate which contains insulator surfaces, said method comprising

(a) contacting the substrate with a hydrogen fluoride solution;

(b) removal of substantially all of said hydrogen fluoride from said substrate;

(c) contacting the substrate with a halogen containing solution, said halogen being selected from the group consisting of chlorine and bromine; and

(d) removing substantially all of said halogen containing solution from said substrate.

4,552,784

METHOD OF COATING A SUBSTRATE WITH A RAPIDLY SOLIDIFIED METAL

Huai-Pu Chu, and Charles L. Staugaitis, both of Silver Spring, Md., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 19, 1984, Ser. No. 590,925

Int. Cl.⁴ B05D *1/12*

U.S. Cl. 427—192 **17 Claims**

1. A process for coating a substrate comprising;

providing a mixture of rapidly solidified metal powder and peening particles; and

spraying said mixture at said substrate by ejection at a velocity which is sufficient to cause said rapidly solidified metal powder and said peening particles to impact said substrate and simultaneously bond said rapidly solidified metal powder to the surface of said substrate in the form of a metal coating.

4,552,785

PROCESS FOR THE PRODUCTION OF PATTERNED LUSTRE COATINGS ON SURFACES OF BODIES

Erwin W. Wartenberg, Brunnenwiesen 6, 7000 Stuttgart 71, Fed. Rep. of Germany

Filed Nov. 1, 1983, Ser. No. 547,758

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242069

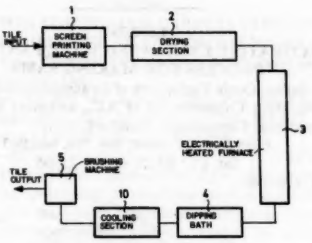
Int. Cl.⁴ B05D *5/06*

U.S. Cl. 427—229 **4 Claims**

1. Process for the production of patterned lustre coatings on

surfaces of bodies of glazed ceramic, glass or enamel using a mask corresponding to the pattern to be produced, wherein the body is heated to a temperature above approximately 400° C., and the heated body is dipped into a liquid solution of a metallic compound kept below the temperature of the body, which metallic compound decomposes on the surface of the heated body to form a thin layer comprised of the metal and oxides of the metal, and, finally, lustre colors are created by the introduction of heat in the metal/metal oxide layer of the body whose surface has been cooled down by the dipping, characterized by the following features:

(a) producing as said mask a negative of the pattern on the surface of the body by screen printing said body with a paste which resists peeling when exposed to 400° C. and when dipped into said liquid solution of a metallic compound, said paste consisting of a liquid base medium, a finely powdered, inorganic covering substance of foliated



crystalline structure and a likewise finely powdered bonding agent which produces an adhesive connection between the surface of the body and the covering substance;

(b) heating the body with the pattern negative to a temperature above approximately 400° C.;

(c) dipping the heated body provided with the pattern negative into said solution of a metallic compound, said metallic compound reacting with the surface of the body not masked by screen printing to form the thin metal/metal oxide layer, the thickness of said layer being regulated so as to allow achievement of the desired lustre color effect, the surface of said heated body being cooled by said dipping;

(d) heating the thin metal/metal oxide layer to form the desired lustre colors; and

(e) removing the pattern negative from the body by dry brushing-off without the addition of a cleaning liquid.

4,552,786

METHOD FOR DENSIFICATION OF CERAMIC MATERIALS

Philip L. Berneburg, Forest, Va., and Val J. Krukonis, Lexington, Mass., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 9, 1984, Ser. No. 659,139
Int. Cl.⁴ C23C *11/00*
U.S. Cl. 427—249 **10 Claims**

1. A process for increasing the density of a ceramic material which comprises:

a. dissolving a ceramic precursor in a supercritical fluid;

b. infiltrating the ceramic material with the ceramic precursor-laden fluid; and

c. reducing the solubility of the ceramic precursor in the fluid to deposit the ceramic precursor in void spaces of the ceramic material.

4,552,787

DEPOSITION OF A METAL FROM AN ELECTROLESS PLATING COMPOSITION

Paul Chebiniak, Endicott; Ronald A. Kaschak, Vestal, and Lois J. Root, Whitney Point, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,960
Int. Cl.⁴ B32D *3/10*
U.S. Cl. 427—304 **17 Claims**

1. A process for the deposition of a metal onto a substrate from an electroless plating composition wherein said substrate is catalytic for the deposition of said metal comprising the steps of:

(a) plating an initial layer of an electroless platable metal from an electroless plating composition on said substrate;

(b) contacting the resulting metal-plated substrate with an an aqueous solution of an acid composition containing about 5% to about 25% by weight of the acid, for about 1 to about 5 minutes; and

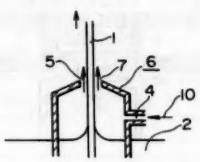
(c) plating an additional layer of an electroless platable metal from an electroless plating composition onto the resulting plated, acid-treated substrate.

4,552,788

HOT DIPPING METHOD FOR FORMING A METAL OR ALLOY COATING AROUND AN ELONGATED BODY

Kenichi Sato; Satoshi Takano, and Kenji Miyazaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,145
Claims priority, application Japan, Dec. 24, 1982, 57-234318; Dec. 25, 1982, 57-233253; Jan. 25, 1983, 58-11019
Int. Cl.⁴ B05D *1/18, 3/02*
U.S. Cl. 427—374.5 **6 Claims**



1. A method for forming a coating on an elongated member by continuous hot dipping, comprising the steps of: providing a gas container the bottom of which is submerged below the surface of a melt and which has at its top a gas discharging port that is aligned in the direction of advancement of the elongated member and which has an inside dimension greater than an outside dimension of said elongated member, supplying an interior of said gas container with a nonoxidizing gas, liquid or a mixture thereof supplied at a temperature in the range of −195 degrees C. to 0 degrees C., cold enough to prevent oxidation of the surface of the melt and to cool said elongated member rapidly, and drawing said elongated member through said gas container.

4,552,789

BACKING BOARD INSERT FOR FOOD PACKAGES

Jack W. Winchell, Madeira, Ohio, assignor to Huggitt Packaging Company, Cincinnati, Ohio

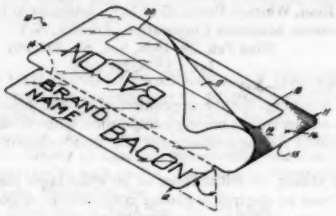
Filed Feb. 15, 1983, Ser. No. 466,596
Int. Cl.⁴ B32B *3/00*
U.S. Cl. 428—132 **10 Claims**

1. An insert for packaging of a moisture laden food product within a vacuum sealed film wrapper comprising:

a substantially planar base ply of high density polyethylene which is pigmented to render it substantially opaque, the base ply bearing printed matter on a face thereof,

a window aperture formed in the base ply, and

a ply of transparent polypropylene film adhered to the base ply and substantially covering the printed face of the base



ply, the polypropylene ply forming a gas barrier window over said window aperture of the base ply.

4,552,790

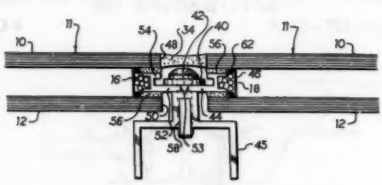
STRUCTURAL SPACER GLAZING WITH CONNECTING SPACER DEVICE

Geoffrey V. Francis, 14 Woodgarden Ct., St. Catharines, Ontario, Canada

Continuation-in-part of Ser. No. 509,652, Jun. 30, 1983,. This application Feb. 24, 1984, Ser. No. 583,221

Int. Cl.⁴ E06B *3/34*

U.S. Cl. 428—34 **13 Claims**



1. A glass insulating sealed unit capable of being mounted on a building without the use of exterior stops comprising at least two spaced-apart glass plates and spacer means to join and seal the edge portions of said glass plates arranged about the entire periphery of said plates and between said plates, said spacer means including at least one connecting spacer device extending along at least one side of said unit having a channel-shaped recess that is open along the edge of the unit, structural sealant on two opposite sides of said spacer device bonding each of said sides to an adjacent inside surface of a respective glass plate, and an elongate strip of compound capable of providing both a dessicant and a vapour seal extending between the glass plates and immediately adjacent to the surface of said spacer device which faces towards the centre of the sealed unit and wherein said spacer device is adapted for the connection of said unit to an adjoining support member so that the exterior glass surface thereof is the outermost point of the unit and adjacent surrounding surfaces of said building.

4,552,791

PLASTIC CONTAINER WITH DECREASED GAS PERMEABILITY

Granville J. Hahn, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

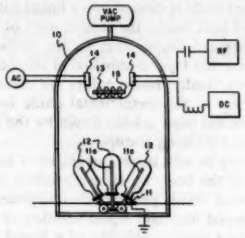
Filed Dec. 9, 1983, Ser. No. 560,065

Int. Cl.⁴ B65D *90/06*

U.S. Cl. 428—35 **15 Claims**

1. A container having decreased gas permeability through the walls thereof, said container comprising:

a thermoplastic organic resin container having at least one sidewall portion and a bottom portion made of said resin; and,



a thin layer of an inorganic oxide coating material ion-deposition plated on at least part of said sidewall portion.

4,552,792

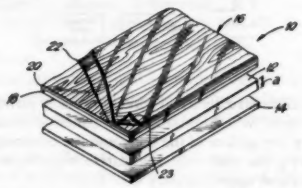
DECORATIVE LAMINATED WALL PANEL AND PROCESS FOR MAKING SAME

Jere C. Julian; Ozzie Fogle, both of Orangeburg, and Roseann S. Helms, West Columbia, all of S.C., assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 31, 1984, Ser. No. 666,903

Int. Cl.⁴ B32B *21/06, 23/08*

U.S. Cl. 428—40 **13 Claims**



1. A composite decorative panel comprising:

a back ply formed from a kraft liner board or paper board material;

a center ply comprised of a wood material and having opposed surfaces, one surface of said center ply being adhered in face to face contact with said back ply; and

a face ply comprising a kraft liner backing layer, a decorative layer, a protective top coating secured in face to face relationship and a removable protective layer of plastic, the kraft liner backing sheet of the face ply being adhered in face to face contact with the surface of said center ply opposite said back ply.

4,552,793

REORIENTED GLASS FIBER BOARD PRODUCT

Neil M. Cameron, Sarnia, and Phillip W. Blackmore, Camlachie, both of Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

Filed Mar. 20, 1984, Ser. No. 591,641

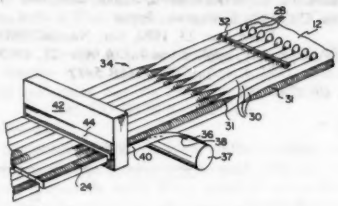
Claims priority, application Canada, Oct. 24, 1983, 439540

Int. Cl.⁴ B32B *3/00*

U.S. Cl. 428—53 **12 Claims**

1. A fibrous material product formed from a mat of glass fibers containing a bonding substance and having fiber laminations which have been rearranged from a first orientation in which said laminations extended generally parallel to opposite major surface of said mat to a second orientation in which at least a major portion of said fiber laminations (**24**) extend transversely across the thickness or height of said mat, said mat being heat-cured and cut perpendicular to the major surfaces of said mat to form a plurality of parallel strips (**30**) having opposite longitudinal cut faces (**31**), and means securing said strips together in side-by-side relationship to form an assembly

with said cut faces forming opposite major surfaces of said assembly, and said major portion of said fiber laminations



extending transversely across the thickness of said assembly between the opposite major surfaces thereof.

4,552,794

COMPOSITION FOR TUFTED CARPETS CONTAINING AZIDOSULFONYL SILANE CROSSLINKER

Raymond W. Goss, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 509,747, Jun. 30, 1983, Pat. No. 4,501,846. This application Aug. 20, 1984, Ser. No. 642,612

Int. Cl.[4] B32B *3/02, 33/00;* **C08K** *5/01*

U.S. Cl. 428—95 **15 Claims**

1. In a hot melt adhesive material having a polymer selected from the group consisting of ethylene-vinyl acetate copolymers, amorphous polypropylenes and amorphous propylene copolymers, the improvement which comprises the addition of from about 40% to about 60% of a composition having a Brookfield viscosity of from about 25 to about 500 centipoise at about 150° C. comprising, by weight:

(a) from about 1% to about 19% of a low density polyethylene having a melt index of from about 70 to about 425;

(b) from about 0.1% to about 5% of a nitrogen-containing silane cross-linking compound having the general formula

$$X_3—Si—R—Z$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; and Z is selected from

$$—O—\overset{\overset{O}{\|}}{C}—\overset{\overset{R'}{|}}{C}H_2,\ —OCN_3,\ \text{and}\ —SO_2N_3;$$

where R' is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR" radicals; where R" is selected from alkyl, cycloalkyl, and aryl radicals;

(c) from about 65% to about 85% of a resin having a Ring and Ball softening point of from about 50° C. to about 115° C. selected from the group consisting of hydrocarbon resins and esters of rosin;

(d) from about 5% to about 7% of a hydrocarbon wax; and

(e) up to about 30% of a naphthenic oil.

8. A carpet comprising:

(a) a primary backing fabric stitched with loops of yarn on the frontside of the primary backing fabric to form a tufted structure;

(b) a composition comprising

(i) from about 1% to about 19% of a low density polyethylene having a melt index of from about 70 to about 425;

(ii) from about 0.1% to about 5% of a nitrogen-containing silane cross-linking compound having the general formula

$$X_3—Si—R—Z$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; and Z is selected from

$$—O—\overset{\overset{O}{\|}}{C}—\overset{\overset{R'}{|}}{C}H_2,\ —OCN_3,\ \text{and}\ —SO_2N_3;$$

where R' is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR" radicals; where R" is selected from alkyl, cycloalkyl, and aryl radicals;

(iii) from about 65% to about 85% of a resin having a Ring and Ball softening point of from about 50° C. to about 115° C. selected from the group consisting of hydrocarbon resins and esters of rosin;

(iv) from about 5% to about 7% of a hydrocarbon wax; and

(v) up to about 30% of a naphthenic oil coated on the backside of the primary backing fabric;

(c) a hot melt adhesive material as recited in claim 1 applied over the composition; and

(d) a secondary backing fabric securely applied to the hot melt adhesive material.

4,552,795

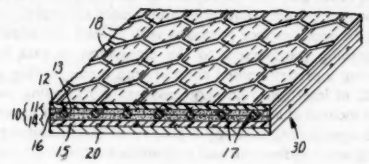
INELASTIC, HEAT-ELASTICIZABLE SHEET MATERIAL

Paul E. Hansen, Lake Elmo, and Susan K. Marquardt, Little Canada, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Dec. 27, 1983, Ser. No. 565,451

Int. Cl.[4] B32B *5/12, 5/24*

U.S. Cl. 428—110 **16 Claims**



1. A substantially inelastic, flexible composite flat sheet material, dimensionally stable at room temperature, comprising in combination:

a plurality of parallel elastomeric strands, extended to at least about three times their relaxed length and heat-bonded at multiple spaced locations to at least one substantially flat inelastic planar web by thermoplastic, substantially inelastic polymeric binder, the stiffness of the combined web and binder decreasing significantly when heated, thereby permitting the elastomeric strands to contract and the sheet material to shirr at right angles to the length of the elastomeric strands.

4,552,796

COMPOSITE PRODUCT HAVING A LOW-POROSITY SUPPORT LAYER

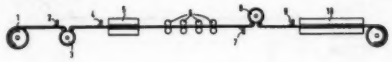
Laurent Haag, Wiltz, Luxembourg, assignor to Eurofloor S.A., Luxembourg

Division of Ser. No. 413,746, Sep. 1, 1982, Pat. No. 4,492,606. This application Oct. 25, 1984, Ser. No. 664,533

Claims priority, application Luxembourg, Sep. 2, 1981, 83602

Int. Cl.[4] B32B *3/24*

U.S. Cl. 428—140 **2 Claims**



1. A composite floor covering product including:

a support substrate of low-porosity material;

a plurality of perforations in said substrate wherein said low-porosity support has perforations ranging in diameter from about 0.5 to about 3 mm, arranged in unit grid segments of from about 2 to about 20 mm in length on each side;

a coating of compact plastisol precoat on both surfaces of said perforated support substrate and extending into said perforations wherein said plastisol essentially fills said perforations, and wherein said coatings are joined and locked together through said perforations; and

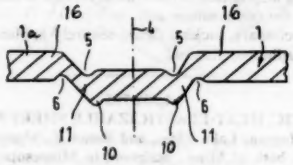
a foamed plastic coating over said plastisol precoat.

4,552,797

PLATE-SHAPED COVERING PROFILE AND METHOD FOR MANUFACTURING THE SAME

Edmund Munk, Oberstenfeld, and Martin Dietz, Mainhardt, both of Fed. Rep. of Germany, assignors to Furnier-U.Sperrholzwerk, Oberstenfeld and J. F. Werz, Jr. KG, Werzalit-Pressholzwerk, Ludwingsburg, both of, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,702
Int. Cl.[4] B32B 3/30
U.S. Cl. 428—167 3 Claims



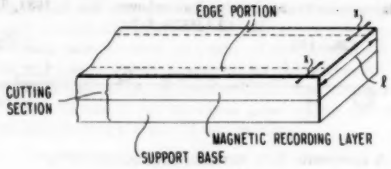
1. A plate-shaped covering profile for covering structures, said covering profile being pressed from a non-swelling mixture of fibrous material and a thermosetting binding agent, the covering profile comprising a one-piece elongated body having an upper surface provided with at least one upper groove extending transversely to the elongation of said body and having a predetermined contour, and a rear surface provided with at least two countergrooves each extending parallel to and located at a different respective side of said upper groove when projecting said upper groove on the rear surface of said body so as to form on said rear surface a bulge corresponding to the contour of said upper groove, so that said upper surface with at least one said upper groove and said lower surface with at least two said countergrooves have different shapes.

4,552,798

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Yasuhiro Abe; Shinobu Iida, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 7, 1984, Ser. No. 577,919
Claims priority, application Japan, Feb. 7, 1983, 58-18584
Int. Cl.[4] G11B 5/72
U.S. Cl. 428—194 15 Claims



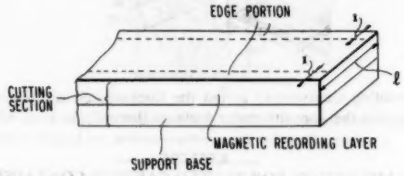
1. A magentic recording medium, comprising:
a support base having thereon
a magnetic recording layer comprised of a ferromagnetic powder dispersed in a binder; and
an aliphatic acid ester compound being present only on an edge portion or the edge portion and a cutting section of the surface of the magnetic recording layer.

4,552,799

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Shinobu Iida; Masaaki Fujiyama, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 23, 1984, Ser. No. 602,985
Claims priority, application Japan, Apr. 21, 1983, 58-70605
Int. Cl.[4] G11B 5/72
U.S. Cl. 428—194 11 Claims



1. A magnetic recording medium comprising a non-magnetic support base having provided thereon a magnetic recording layer comprised of ferromagnetic particles dispersed in a binder wherein a compound selected from the group consisting of carboxylic acids and carboxylic acid derivatives is applied only to a cutting section of the recording medium to exude on an edge portion of the surface of the magnetic recording layer, wherein the compound selected from the group consisting of carboxylic acids and carboxylic acid derivatives is applied to the cutting section of the recording medium in an amount in the range of 0.01 to 500 g/m^2.

4,552,800

COMPOSITE INORGANIC STRUCTURES

Earl Blasch, Albany, N.Y., and Robert Smith-Johannsen, Incline Village, Nev., assignors to Blasch Precision Ceramics, Inc., Schenectady, N.Y.

Continuation of Ser. No. 423,750, Sep. 27, 1982, abandoned, which is a division of Ser. No. 260,732, May 5, 1981, , which is a continuation of Ser. No. 17,154, Mar. 2, 1979, abandoned. This application Nov. 23, 1983, Ser. No. 554,753
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.[4] C04B 35/02
U.S. Cl. 428—212 6 Claims

1. A composite ceramic article produced by a process which comprises:
(a) forming a first slurry composed of inorganic particles and a freeze-sensitive colloidal ceramic sol,
(b) forming at least a second slurry composed of different inorganic particles having a different mass thermal coefficient of expansion than the inorganic particles used in the first slurry and a freeze-sensitive colloidal ceramic sol which can be the same as or different from the colloidal sol used in said first slurry;
(c) bringing the slurries into physical contact with each other in a layered fashion without substantial intermixing thereof; and
(d) simultaneously freezing the layered slurries in a cooling media while in contact with each other to form a unified structure having a substantially uniform porosity or void volume and which is characterized by an interfacial bond of sufficient strength to withstand temperatures of at least about 3000° F. and having high thermal shock resistance and wherein the difference between the two mass thermal coefficients of expansion, although sufficient to cause disruption of the interfacial bond resulting from conventional processes for producing composite inorganic articles, does not cause disruption of the interfacial bond at temperatures of at least about 3000° F.

4,552,801

PLASTICIZED EVOH AND PROCESS AND PRODUCTS UTILIZING SAME

Thomas W. Odorzynski, Green Bay, and Jack E. Knott, II, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 369,420, Apr. 19, 1982, Pat. No. 4,451,599, which is a division of Ser. No. 249,975, Apr. 1, 1981, abandoned. This application Jun. 20, 1984, Ser. No. 622,662

Int. Cl.[4] B32B *9/04, 27/08*

U.S. Cl. 428—220 7 Claims

1. As a composite film of relatively uniform caliper, a coextrudate comprised of successive first through fifth layers of: (1) film-forming polyamide resin, (2) a blend of about 95 to 80 weight percent of at least one ethylene vinyl alcohol copolymer, and conversely about 5 to 20 weight percent of a plasticizer therefor, (3) film-forming polyamide resin, (4) adhesive and (5) ionomer resin, respectively, said film-forming polyamide resin having a molecular weight of about 20,000 to 30,000 and a melting point temperature of about 415 degrees to 440 degrees Fahrenheit, said EVOH copolymer having a molecular weight of about 15,000 to 30,000, a vinyl alcohol moiety content of about 60 to 75 percent thereof, and a melting point temperature of about 325 degrees to 375 degrees Fahrenheit, said adhesive layer comprising an anhydride modified polyolefin or a partially hydrolyzed ethylene vinyl acetate copolymer, and said plasticizer being an aromatic sulfonamide selected from the class consisting of o,p-toluene sulfonamide, N-ethyl-o,p-toluenesulfonamide and ethylbenzene sulfonamide.

5. As a composite film, a coextrudate comprised of successive layers of (1) film-forming polyamide resin, (2) a blend of about 90 weight percent of at least one ethylene vinyl alcohol copolymer and about 10 weight percent of a plasticizer therefor, and said plasticizer being an aromatic sulfonamide selected from the class consisting of o, p-toluene sulfonamide, N-ethyl-o, p-toluene sulfonamide and ethylbenzene sulfonamide and (3) film-forming polyamide resin, respectively, said film-forming polyamide resin having a molecular weight of about 20,000 to 30,000 and a melting point temperature of about 415 degrees to 440 degrees Fahrenheit, said EVOH copolymer having a molecular weight of about 15,000 to 30,000, a vinyl alcohol moiety content of about 60 to 75 percent thereof, and a melting point temperature of about 325 degrees to 375 degrees Fahrenheit, the thickness of said EVOH layer (2), at any point across the width of said film, deviating by no more than 50 percent from the mean thickness value of said layer, and at least about 60 percent of said layer having a thickness within about 20 percent of said mean value.

4,552,802

SELF-ADHESIVE PRODUCT, PROCESS FOR ITS MANUFACTURE AND APPLICATION AS A DRESSING, PACKING SHEET OR FIXING TAPE

Jean-Claude Mechin, 109 Boulevard Malesherbes, 75008 Paris, France

Filed Jul. 15, 1983, Ser. No. 514,220

Int. Cl.[4] B32B *7/12;* B05D *5/10;* C09J *7/02*

U.S. Cl. 428—255 14 Claims

1. A self-adhesive product in the form of a sheet, band or tape comprising a support coated with at least one self-adhesive layer, which adheres to practically no product, including skin and hair, other than itself, which includes a cellular support coated with a layer of synthetic or natural elastomer previously treated by heating at a temperature between 70° and 160° C., followed by cooling.

2. The self-adhesive product as claimed in claim 1, wherein the elastomer is a natural rubber or cis-1,4-polyisoprene, a butadiene-styrene copolymer, a cis-1,4-polybutadiene, a polyoxypropylene, a polyoxychoropropylene or a polyacrylate.

3. The self-adhesive product as claimed in either of claims 1 and 2, wherein the support consists of a band of gauze.

4,552,803

FIRE RETARDANT POWDERS AND METHODS

Glenn A. Pearson, 3834 Mt. Vernon Ave., Alexandria, Va. 22305

Continuation-in-part of Ser. No. 462,078, Jan. 28, 1983, Pat. No. 4,468,495. This application Aug. 21, 1984, Ser. No. 642,772

Int. Cl.[4] B32B *7/00;* C08L *61/24*

U.S. Cl. 428—262 24 Claims

1. An article of manufacture comprising a substrate coated with a fire retardant composition comprising a powder resin which is the reaction product of the following components: (a) about 70–140 parts by weight of an aldehyde, (b) about 50–250 parts by weight of an ammonium phosphate, (c) about 50–250 parts by weight of ammonium, alkali metal or alkaline earth metal compound or salt, (d) about 70–190 parts by weight of a urea reactant, (e) about 20–60 parts by weight of hydroxy reactant, and (f) about 150–250 parts by weight of phosphoric acid, components (a), (b), (c), (d), and (e) having been mixed together and heated at temperatures of about 160°–200° F., the phosphoric acid then being added to the mixture of the other components.

4,552,804

PREVENTION OF SILICA MIGRATION IN THERMAL INSULATION WITH WATER-SOLUBLE SALTS OF INORGANIC OXYGEN-CONTAINING ACIDS OR ACIDIC GASES

Charles C. Payne, Aurora, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 21, 1982, Ser. No. 390,725

Int. Cl.[4] B05D *3/00*

U.S. Cl. 428—283 5 Claims

1. In a process of manufacturing discrete, ceramic fiber insulation products, comprising the steps of:

(a) slurring alumino silicate fibers with colloidal silica and vacuum drying said slurry to form a pre-treated mat;

(b) providing an alkali-stabilized water suspension of colloidal silica, which has a pH of at least 8.5, a particle size of at least 5 nanometers and a SiO_2 concentration of at least 5% by weight;

(c) incorporating from about 0.1 to about 3% by weight of a water-soluble salt of an inorganic oxygen-containing acid in said suspension to form a modified suspension;

(d) infusing the modified suspension into the pre-treated mat and then,

(e) drying said mat.

4,552,805

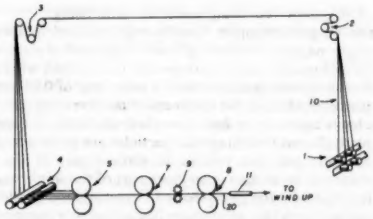
COMPOSITES REINFORCED WITH HIGH STRENGTH ARAMID FIBERS HAVING FIBRILLATED ENDS

Floyd H. Fish, Jr., and Herbert G. Lauterbach, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1984, Ser. No. 682,171

Int. Cl.[4] B32B *5/06*

U.S. Cl. 428—297 8 Claims



1. A composite comprising a matrix resin reinforced with sliver of high modulus p-aramid fibers of which at least 10% of the fiber ends are fibrillated into at least 2 fibrils along a termi-

nal length which is at least 5 times as long as the diameter of the unfibrillated portion of the fiber.

4,552,806

CELLULAR GLASS COATED WITH A HEAT INSULATOR

Hiroaki Hayashi, Aichi; Toshio Kandori, Seto, and Yoshiaki Fukushima, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jul. 12, 1983, Ser. No. 513,029

Claims priority, application Japan, Jul. 16, 1982, 57-124830

Int. Cl.[4] B32B *19/04*

U.S. Cl. 428—312.6 **19 Claims**

1. A heat-insulating product comprising three distinct layers with cellular glass as a substrate, an adhesive layer composed of a solidified mixture of water glass and a porous substance containing polyvalent ions selected from the group consisting of Mg, Ca, Al and Ba, formed on said substrate, and a coating layer composed of a laminate of flakes of a laminar mineral, formed on said adhesive layer.

4,552,807

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Takahito Miyoshi; Toshimitsu Okutsu, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed May 19, 1983, Ser. No. 496,202

Claims priority, application Japan, May 19, 1982, 57-83174

Int. Cl.[4] G11B *5/72*

U.S. Cl. 428—323 **17 Claims**

1. A magnetic recording medium comprising a magnetic layer on one side of a support and a back layer on the opposite side thereto, the back layer containing a filler dispersed in a binder, in which the binder consists essentially of a cellulose-type resin, diolefin- or olefin-type synthetic rubber and poly-isocyanate.

4,552,808

MAGNETIC RECORDING MATERIAL USING PLATE-SHAPED FERROMAGNETIC PARTICLES

Masaaki Fujiyama; Takamitsu Asai, and Toshihiko Miura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 23, 1983, Ser. No. 554,658

Claims priority, application Japan, Nov. 25, 1982, 57-206521

Int. Cl.[4] G11B *5/68, 5/70*

U.S. Cl. 428—328 **27 Claims**

1. A magnetic recording material, comprising:

a non-magnetic support base having provided thereon;

a single magnetic recording layer comprised of plate-shaped ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles have a mean size of 0.01 μm to 10 μm, and wherein the thickness of the ferromagnetic particles is equal to or less than their diameter, wherein the plate-shaped ferromagnetic particles are present in greater numbers per unit volume in surface part of the single magnetic layer than in an inner part of the single magnetic layer and/or the plate-shaped ferromagnetic particles are aligned such that an average horizontal axis component of the particles which respect to the surface of the single magnetic layer is larger in the surface part than in the inner part thereof.

14. A magnetic recording material as claimed in claim 1, wherein said magnetic recording material is formed by subjecting the same to at least one surface particle alignment method selected from the group consisting of:

forcing the surface of the magnetic layer to come into contact with a heated roll;

forcing the magnetic recording material to pass between a compressive rubbing roll and a tape driving roll, which differ in rotating speed, in such a manner that the magnetic layer has contact with the compressive rubbing roll;

forcing the magnetic recording material to pass between a hard compressive rubbing roll and a soft roll, which differ in rotating speed, in such a manner that the magnetic layer has contact with the hard compressive rubbing roll; and

forcing the magnetic recording material to pass between a heated hard roll having a small diameter and a cooled hard roll having a large diameter in such a manner that the magnetic layer has contact with the hard roll having a small diameter.

4,552,809

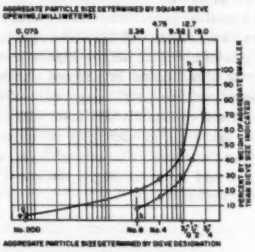
PERMEABLE ASPHALTIC CONCRETE

Wayne R. Broaddus; Khalil N. Jaber, both of Dalton, and Thomas A. Orofino, Rocky Face, all of Ga., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 546,801, Oct. 31, 1983, Pat. No. 4,515,839. This application Aug. 23, 1984, Ser. No. 643,607

Int. Cl.[4] B32B *5/16*

U.S. Cl. 428—331 **3 Claims**



3. A permeable asphaltic concrete base for supporting artificial turf, said base comprising at least two layers of asphaltic concrete comprising asphaltic cement and a gradated mixture of aggregate rock, wherein the asphaltic concrete of a lower layer comprises a gradated mixture of aggregate rock having a size distribution such that the percentage by weight of the mixture passing through a sieve having square openings of

(a) 38.1 millimeters is 100 percent,

(b) 25.4 millimeters is 95–100 percent,

(c) 19.0 millimeters is 75–95 percent,

(d) 12.7 millimeters is 40–60 percent,

(e) 9.52 millimeters is 30–40 percent,

(f) 4.75 millimeters is 20–30 percent,

(g) 2.36 millimeters is 15–25 percent, and

(h) 0.075 millimeters is 0–3 percent;

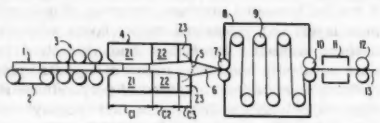
and wherein the asphaltic concrete of an upper layer comprises a gradated mixture of aggregate rock having a size distribution the same as the lower layer except there is no aggregate having a size larger than 19.0 millimeters.

4,552,810

PNEUMATIC CELLULAR AROMATIC POLYAMIDE ARTICLES AND PROCESS FOR THE PREPARATION THEREOF

Susumu Norota, Osaka; Yasuhiko Segawa, Yamaguchi, and Shingo Emi, Osaka, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 495,927, May 19, 1983, abandoned. This application Dec. 13, 1983, Ser. No. 561,251
Claims priority, application Japan, May 19, 1982, 57-83238
Int. Cl.⁴ D02G *3/00*
U.S. Cl. 428—398 **4 Claims**



1. Pneumatic cellular aromatic polyamide articles comprising

(a) a fiber prepared substantially from aromatic polyamide,
(b) said fiber having numerous bubbles at a void ratio in the range of 10 to 95%,
(c) said bubbles being substantially enclosed in said fiber, and
(d) said fiber having an average diameter in the range of 0.2 to 10 mm on the cross section made by cutting the fiber at right angles to the longest axis, and
(e) said fiber having a surface which is substantially not porous.

4,552,811

CAPSULE MANUFACTURE

Robert W. Brown, and Richard P. Bowman, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 517,296, Jul. 26, 1983, abandoned. This application Jun. 12, 1984, Ser. No. 619,967
Int. Cl.⁴ B01J *13/02*
U.S. Cl. 428—402.21 **14 Claims**

1. A process for preparing microcapsules in an aqueous manufacturing vehicle which comprises enwrapping particles of intended capsule core material, substantially insoluble in said vehicle, with polymeric shells produced by in situ polymerization of melamine and formaldehyde, methylol melamine, methylated methylol melamine, urea and formaldehyde, dimethylol urea or methylated dimethylol urea in the presence of an acrylic acid-alkyl acrylate copolymer, wherein the weight percent and type of alkyl acrylate in said copolymer are selected from the group consisting of about 12 to about 30 ethyl acrylate, about 6 to about 14 propyl acrylate, about 4 to about 20 butyl acrylate, about 2 to about 14 amyl acrylate, about 2 to about 10 hexyl acrylate, about 4 to about 12 cyclohexyl acrylate and about 2 2-ethylhexyl acrylate and said copolymer is present as about 0.4 to about 15 percent by weight of said manufacturing vehicle.

14. Microcapsules produced by a process as claimed in claim **1**.

4,552,812

PROCESS FOR THE PRODUCTION OF POLYACROLEIN MICROSPHERES AND GRAFTED MICROSPHERES

Shlomo Margel, and Uzi Beitler, both of Rehovot, Israel, assignors to Yeda Research and Development Company, Rehovot, Israel

Filed Dec. 14, 1981, Ser. No. 330,451
Claims priority, application Israel, Jul. 1, 1981, 63220
Int. Cl.⁴ B32B *5/16;* **C08F** *16/34;* **B01J** *13/02;* **C12N** *11/08*
U.S. Cl. 428—407 **25 Claims**

1. A process for producing a polyacrolein-type microsphere which comprises subjecting an aqueous mixture of a polymerizable acrolein-type monomer to polymerization in the presence of an effective amount of a suitable ionic surfactant which promotes microsphere formation upon polymerization of the monomer so as to form a microsphere, the polymerization being effected at a pH between 8.0 and 13.7, and recovering the resulting microsphere and purifying the microsphere so recovered.

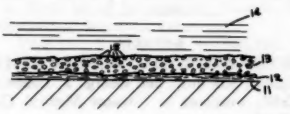
23. A grafted microsphere comprising a polyacrolein-type microsphere to which at least one polymeric microsphere having a diameter less than one-fourth the diameter of the polyacrolein-type microsphere is attached.

4,552,813

METHOD OF INHIBITING THE GROWTH OF MARINE LIFE ON SURFACES IN CONTACT WITH SEAWATER

Ralph R. Grams, 2025 NW. 24th St., Gainesville, Fla. 32605

Continuation of Ser. No. 348,504, Feb. 12, 1982, abandoned. This application Sep. 21, 1983, Ser. No. 534,499
Int. Cl.⁴ B32B *9/04*
U.S. Cl. 428—411.1 **6 Claims**



1. A method for inhibiting the growth of marine life on surfaces in contact with seawater comprising covering that surface with a suitable coating for seawater applications in which is dispersed an effective amount of particles of a polycyclic naphthacenecarboxamide available at the outer surface of the coating for contact by seawater.

4,552,814

ADVANCED EPOXY RESINS HAVING IMPROVED IMPACT RESISTANCE WHEN CURED

Michael B. Cavitt, and Neal L. Wassberg, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 612,287, May 21, 1984, abandoned. This application Jan. 30, 1985, Ser. No. 696,673
Int. Cl.⁴ C08G *59/14, 59/62*
U.S. Cl. 428—414 **18 Claims**

1. An advanced epoxy resin composition comprising a product resulting from reacting (A) a mixture containing (1) at least one polyglycidyl ether of a material having at least two aliphatic hydroxyl groups per molecule, (2) at least one epoxy resin having an average of from about 2.6 to about 6 glycidyl ether groups per molecule attached to one or more aromatic rings and optionally (3) one or more glycidyl ethers of a dihydric phenol; with (B) at least one dihydric phenol in the presence of a suitable quantity of a suitable catalyst; and wherein (i) components (A) and (B) are present in quantities which provide an epoxy to phenolic hydroxyl ratio of from about 1.4:1 to about 4:1, with the proviso that all calculations are on the basis that there are no substituent groups other than hydrogen,

hydroxyl or glycidyl ether groups attached to any aromatic rings of any of the components even when such groups are actually present and (ii) wherein the number of epoxy equivalents contributed by component (A-3) to the number of epoxy equivalents contributed by component (A-2) to the number of epoxy equivalents contributed by component (A-1) is from abut 0:0.05:1 to about 0.3:0.6:1.

4,552,815

PRESTRESSING ELEMENTS COATED WITH PLASTIC MATERIAL AND PROCESS FOR MAKING THEM

Bernd Dreher, Basel, and Wolfgang Schneider, Kaiseraugst, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Sep. 22, 1983, Ser. No. 534,995

Claims priority, application Switzerland, Oct. 1, 1982, 5808/82; Feb. 10, 1983, 756/83

Int. Cl.⁴ B32B *27/38, 27/40;* B05D *1/36*

U.S. Cl. 428—415 **15 Claims**

1. A prestressing element, which is metal, plastic, glass, carbon fibers or whiskers, onto which is applied an inner polymer-forming layer and an outer solid plastic layer, the said prestressing element being designed so that the inner layer consists of a moldable and thermally curable composition which is storage-stable at room temperature, and the outer layer consists of a plastic material cured by radiation.

14. A process for producing a two-layer plastic coating for a prestressing element, which is metal, plastic, glass, carbon fibers or whiskers, which comprises

(a) applying to the prestressing element an inner layer consisting of a moldable and thermally curable composition which is stable in storage at room temperature;

(b) applying an outer layer of a composition curable by radiation; and

(c) curing afterwards the outer layer by radiation.

4,552,816

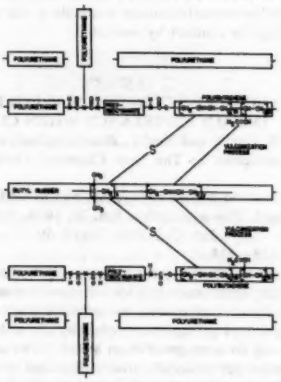
PROCESS FOR PRODUCING RUBBER LAMINATES

Bojana K. Spahic, San Jose, and George F. Green, Hayward, both of Calif., assignors to Novacor Medical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 557,856, Dec. 5, 1983, abandoned. This application Oct. 30, 1984, Ser. No. 665,011

Int. Cl.⁴ B32B *7/10, 31/06, 27/40*

U.S. Cl. 428—420 **7 Claims**



1. A process for producing covalently bonded laminates comprised of polyurethane elastomer and vulcanized rubber layers comprising:

interposing between a thickness of polyurethane elastomer composition and a thickness of vulcanizable rubber composition a thickness of grafted polyurethane joining composition, said grafted polyurethane joining composition being comprised of polyurethane elastomer segments, polyisocyanate segments and hydroxyl containing polybutadiene segments wherein said polyurethane elastomer segments and a first functional (NCO) group on said polyisocyanate segments are covalently bonded to one another, and said hydroxyl containing polybutadiene segments and a second functional (NCO) group on said polyisocyanate segments are covalently bonded to one another,

and heating the resulting assembly.

4. A bonded laminated structure comprised of polyurethane elastomer layers and vulcanized rubber layers wherein said polyurethane elastomer layers and said vulcanized rubber layers are covalently bonded by means of a grafted polyurethane joining composition comprised of polyurethane elastomer segments, polyisocyanate segments and hydroxyl containing polybutadiene segments wherein said polyurethane elastomer segments and a first functional (NCO) group on said polyisocyanate segments are covalently bonded to one another, and said hydroxyl containing polybutadiene segments and a second functional (NCO) group on said polyisocyanate segments are covalently bonded to one another.

4,552,817

INACTIVATED POLYURETHANE AND A METHOD FOR PREPARING IT

Jaan M. Uustalu, Lund, Sweden, assignor to Protector Agentur AB, Malmo, Sweden

PCT No. PCT/SE83/00169, § 371 Date Dec. 29, 1983, § 102(e) Date Dec. 29, 1983, PCT Pub. No. WO83/03837, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 28, 1983, Ser. No. 574,028

Claims priority, application Sweden, May 4, 1982, 8202776

Int. Cl.⁴ B32B *27/08*

U.S. Cl. 428—423.7 **4 Claims**

1. An article of manufacture for use by a person and comprising an inactivated polyurethane article coated with a protective layer to prevent migration of free isocyanate from the polyurethane, said protective layer characterised by a hydroxyl group containing polymer the hydroxyl groups of which are capable of reacting with free isocyanate groups in the polyurethane, said polymer comprising a member of the group polyvinyl alcohol, partly hydrolyzed polyvinyl acetate, copolymers of vinyl alcohol and hydrolyzed polyvinyl acetate, the product of polymerization of hydroxyl containing vinyl monomers, the product of polymerization of hydroxyl containing acrylate monomers, and hydroxyl group-terminated low molecular polyesters.

4,552,818

SILICONE ENCAPSULANT CONTAINING PORPHYRIN

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed May 10, 1984, Ser. No. 608,836

Int. Cl.⁴ B32B *9/04*

U.S. Cl. 428—447 **6 Claims**

1. An article of manufacture comprises an electronic device and an encapsulant thereover, said encapsulant being a polymeric silicone resin containing from 0.02 to 0.1 weight percent of a soluble colored, free porphyrin compound having a molar extinction coefficient to a wavelength in the visible spectrum of at least 1×10^4 liter mole^{-1} cm.$^{-1}$.

4,552,819
ADHESIVE AND HEAT RECOVERABLE ARTICLE HAVING A LAYER OF THE ADHESIVE

Yutaka Hibino, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

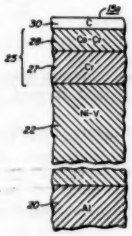
Filed Oct. 12, 1983, Ser. No. 541,181
Claims priority, application Japan, Oct. 12, 1982, 57-179633; Oct. 14, 1982, 57-180593
Int. Cl.⁴ B32B *27/08*; C08F *216/06*
U.S. Cl. 428—516 **18 Claims**

1. An adhesive, comprising:
50 to 90 wt% of ethylene-vinyl acetate copolymer having a hydrolysis ratio of 50 to 90 wt%;
5 to 30 wt% of polyamide resin having an amine value of 0.5 to 15, the polyamide resin being a reaction product of a dimer acid and a diamine; and
5 to 30 wt% of a block copolymer selected from the group consisting of styrene-butadiene-styrene block copolymer and styrene-isoprene-styrene block copolymer, wherein the block copolymer contains less than 30 wt% of styrene.

4,552,820
DISC MEDIA

Yeong S. Lin, Monte Sereno; Nathan T. Ballard; John T. Lee, both of San Jose, and Edward F. Teng, Sunnyvale, all of Calif., assignors to Lin Data Corporation, Santa Clara, Calif.

Filed Apr. 25, 1984, Ser. No. 603,534
Int. Cl.⁴ G11B *5/66, 5/82*; C23C *15/00*
U.S. Cl. 428—611 **20 Claims**



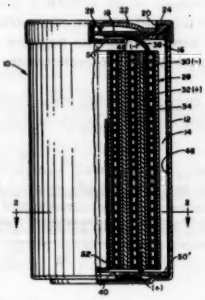
1. A method of fabricating a thin-film disc comprising the steps of:
(a) providing a base having a surface roughness less than about 250 Å;
(b) sputtering a substantially non-magnetic nickel-vanadium layer to a thickness of no more than approximately 10 microns; and
(c) depositing at least one magnetic layer to define the recording medium proper of the disc.

4,552,821
SEALED NICKEL-ZINC BATTERY

Henry F. Gibbard, Schaumburg; Richard C. Murray, Jr.; Ronald A. Putt, both of Palatine; Theodore W. Valentine, Algonquin, all of Ill., and Claude J. Menard, St. Paul, Minn., assignors to Duracell Inc., Bethel, Conn.

Continuation of Ser. No. 509,686, Jun. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 402,383, Jul. 27, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 612,290
Int. Cl.⁴ H01M *10/52*
U.S. Cl. 429—57 **11 Claims**

1. A sealed, rechargeable nickel-zinc cell comprising a sealed housing defining a cell space, an electrochemical cell element contained in said cell space, said electrochemical cell element comprising a wound roll and including a zinc electrode comprising a current collector and an active mass, a nickel electrode and a separator therebetween, a predetermined amount of an alkaline electrolyte contained in said cell housing, a positive terminal electrically connected to said nickel electrode, a negative terminal electrically connected to said zinc electrode, and means for oxidizing hydrogen evolved in service to maintain a satisfactorily low internal pressure within said cell; characterized in that said zinc electrode active

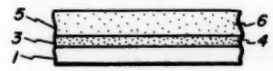


mass is essentially free of zinc metal and comprises zinc oxide admixed with cadmium metal, and wherein said said electrochemical cell element is wound such that the element is under compression, and said separator comprises a microporous material and is free of coating material.

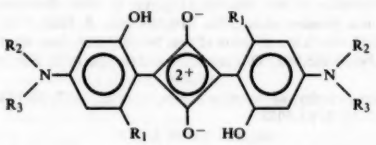
4,552,822
PHOTOCONDUCTIVE DEVICES WITH HYDROXY CONTAINING SQUARAINE COMPOSITIONS

Peter M. Kazmaier; Guiseppa Baranyi; Cheng-kuo Hsiao, and Richard A. Burt, all of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1983, Ser. No. 558,246
Int. Cl.⁴ G03G *5/04, 5/14*; C07C *87/50*
U.S. Cl. 430—59 **61 Claims**



1. An improved photoresponsive device comprised in the order stated of (1) a supporting substrate, (2) a photoconductive layer comprised of the squaraine compositions of the following formula, and (3) a diamine hole transport layer



wherein R_1, R_2 and R_3 are independently selected from the group consisting of alkyl substituents and aryl substituents.

4,552,823
SEPARATOR PLATE FOR LEAD-ACID BATTERY

Eugene Wozniak, 12960 S. Ashland, Blue Island, Ill. 60406

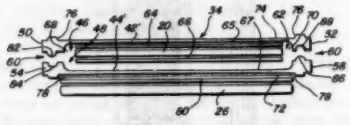
Filed Jul. 5, 1984, Ser. No. 628,030
Int. Cl.⁴ H01M *2/18*
U.S. Cl. 429—81 **23 Claims**

1. In a lead acid storage battery having a casing for storing electrolyte therein and a stack of planar negative and positive electrodes in alternating assembly upstanding in the casing, an oxide material retention mat juxtaposed opposite surfaces of

each electrode, and a separator plate sandwich assembly for each said negative electrode , the improvement comprising:

A. The separator plate sandwich assembly comprised of a pair of like opposing, planar wall segments spaced one from the other by a pair of protrusions along their proximate lateral marginal edges, and joined along their proximate lateral marginal edges to form a pocket formation opening to the top and bottom edges thereof with said opposed walls sandwiching the negative electrode and juxtaposed retention mats therebetween in the pocket formation;

B. cooperatively engaged locking means integrally formed with said protrusions to lock together and seal the lateral



margins of the separator plate assembly from electrical paths therethrough effecting short circuiting between said positive and negative electrodes, said opposing planar wall segments being spaced by a distance sufficient to permit frictional engagement of the negative electrode and juxtaposed retention mats, and having a length sufficiently greater than the length of the negative plate to create vertically extending flow channels and permit flow-through of electrolyte between the negative electrode and the locked lateral margins; and

C. a pair of upstanding abutments along the lateral marginal edges of said wall segments facing diametrically opposite to said protrusions, for locating and positioning a positive plate and juxtaposed retention mat therebetween.

4,552,824

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND PROCESS FOR PRODUCTION THEREOF

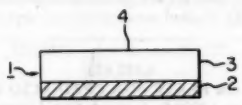
Yutaka Hirai, Tokyo; Toshiyuki Komatsu, Kawasaki; Katsumi Nakagawa, Tokyo; Teruo Misumi, Toride, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 449,842, May 3, 1984, abandoned, which is a division of Ser. No. 214,045, Dec. 8, 1980, Pat. No. 4,451,547, which is a division of Ser. No. 971,114, Dec. 19, 1978, Pat. No. 4,265,991. This application Jan. 28, 1985, Ser. No. 695,428

Claims priority, application Japan, Dec. 22, 1977, 52-154629; Jan. 23, 1978, 53-5958

Int. Cl.[4] G03G *5/082*

U.S. Cl. 430—64 **33 Claims**



1. An electrophotographic photosensitive member comprising a substrate for electrophotography and a photoconductive layer comprising an amorphous silicon and containing 10–40 atomic % of hydrogen to provide high dark resistance and high SN ratio for electrophotographic processing.

4,552,825

PHOSPHOROUS DIKETONATE ELECTRON ACCEPTING RING COMPOUNDS AS SENSITIZERS FOR ELECTRON DONATING PHOTOCONDUCTIVE COMPOSITIONS

Chin H. Chen; Thomas E. Goliber; Jerome H. Perlstein, and George A. Reynolds, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 420,461, Sep. 20, 1982, Pat. No. 4,496,730. This application Aug. 27, 1984, Ser. No. 644,300

Int. Cl.[4] G03G *5/04*

U.S. Cl. 430—83 **6 Claims**

1. A photoconductive composition characterized in that it comprises an electron donating organic photoconductor and a sensitizing amount of a tellurium-free compound having a tetrafluorophosphate diketonate component.

4,552,826

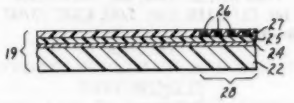
METHOD OF FORMING COMPOSITE IMAGE AS IN ADD-ON NON-SILVER MICROFICHE

Richard S. Fisch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 13, 1983, Ser. No. 541,527

Int. Cl.[4] G03C *5/08, 5/18;* **G03F** *7/26*

U.S. Cl. 430—142 **15 Claims**



1. A method of forming a composite image in an imaging material having first and second layered structures, said method comprising:

a. providing a first layer structure comprising:

1. a flexible support,
2. a vapor-deposited metal layer having a conductivity in the range of 0.28 to 1.20 ohms/cm^2 and a thickness in the range of 10 to 800 Å on at least one surface of said support, and
3. a non-silver-containing positive- or negative-acting photosensitive, photoresist layer overlying said metal layer,

b. imagewise exposing said photosensitive photoresist layer, in a discrete area, to radiant energy,

c. developing said first layered structure in a developer sequence to provide a positive or negative image of metal and photoresist, said metal image being of archival quality, said image being protected by photoresist material,

d. washing said imaged first layered structure with solvent to remove remaining imagewise exposed areas of negative-acting photoresist material or imagewise unexposed areas of positive-acting photoresist material,

e. providing a second layered structure comprising in sequence:

1. a non-silver-containing positive- or negative-acting photosensitive, photoresist layer,
2. a stripping layer, and
3. a flexible support,

f. laminating said second photosensitive layered structure to said first imaged layered structure, said first imaged layer and said second photosensitive photoresist layer being adjacent to each other,

g. stripping said flexible support from said photosensitive photoresist layer of said second layered structure,

h. imagewise exposing said second photosensitive, photoresist layer, in a discrete area, to radiant energy, and

i. developing said second photosensitive photoresist layer in a developer solution to provide a composite positive or negative image of metal and photoresist, said metal image

being of archival quality, said metal image being protected by photoresist material, wherein said metal image of step c. and step i. are in the same layer,

said photosensitive, unexposed areas of negative-acting photoresist layers and said imagewise exposed areas of positive-acting photoresist layers and said metal layer being soluble in said developer solutions and at least one of said developer solutions has a pH of at least 12.5.

4,552,827

PLANOGRAPHIC PRINTING PLATE HAVING CATIONIC COMPOUND IN INTERLAYER

Nils Eklund, Croton-on-Hudson, and Jen-chi Huang, Ossining, both of N.Y., assignors to Polychrome Corp., Yonkers, N.Y.

Division of Ser. No. 514,408, Jul. 18, 1983, Pat. No. 4,483,913. This application Aug. 29, 1984, Ser. No. 645,470

Int. Cl.⁴ G03C *1/52*

U.S. Cl. 430—160 **9 Claims**

1. In a presensitized planographic printing plate comprising an anodized, grained and/or etched metal substrate, a hydrophilic sealing layer on the substrate, and a photosensitive layer comprising a diazo light-sensitive material on the sealing layer; the improvement which comprises utilizing, between said sealing layer and said photosensitive layer, an interlayer comprising a hydrophilic monomer or polymer of an organic compound having at least one cationic, quaternary substituted ammonium group with substituents selected from the group consisting of alkyl groups having from 1 to 25 carbon atoms and aryl groups having from 1 to 20 carbon atoms.

4,552,828

DIRECT POSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSION

Ichizo Toya; Yuji Mihara, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 30, 1983, Ser. No. 527,922

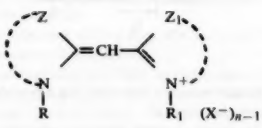
Claims priority, application Japan, Aug. 30, 1982, 57-150581

Int. Cl.⁴ G03C *1/40, 5/54, 1/16, 1/28*

U.S. Cl. 430—217 **30 Claims**

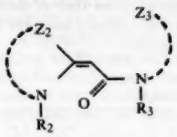
9. A diffusion transfer photographic material comprising a photosensitive unit comprising a layer of an internal latent image type silver halide emulsion associated with a non-diffusible dye image-providing material capable of releasing a diffusible dye in proportion to the amount of developed silver in said silver halide emulsion layer, and a dyeing layer for receiving said diffusible dye, and a processing composition unit for processing the photosensitive unit, said internal latent image type silver halide emulsion containing at least one sensitizing dye selected from the group consisting of dyes represented by general formula I and at least one compound selected from the group consisting of compounds represented by general formula II;

Formula I:



wherein Z and Z_1 each represents a non-metallic atomic group necessary for completing a benzoxazole nucleus, a benzothiazole nucleus, a benzoselenazole nucleus, a naphthooxazole nucleus, a naphthothiazole nucleus, a naphthoselenazole nucleus, a thiazole nucleus, a thiazoline nucleus, a pyridine nucleus, or a quinoline nucleus; R and R_1 each represents an alkyl group, a substituted alkyl group, or an allyl group; X^- represents an acid anion; and n represents 1 or 2:

Formula II:



wherein Z_2 represents a non-metallic atomic group necessary for completing a thiazole nucleus, a thiazoline nucleus, a selenazole nucleus, a selenazoline nucleus, or a pyrrolidine nucleus; Z_3 represents a non-metallic atomic group necessary for completing a rhodanine nucleus, a 2-thiohydantoin nucleus, a 2-thiooxazolidine-2,4-dione nucleus, a 2-thioselenazolidine-2,4-dione nucleus; and R_2 and R_3 each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aromatic group, or an allyl group, said photographic material containing a fogging agent which acts during development or pre-bath processing to preferentially form surface development nuclei.

4,552,829

TRANSFER SHEET WITH COLOR PATTERN HAVING METALLIC LUSTER, AND METHOD OF MANUFACTURING SAID SHEET

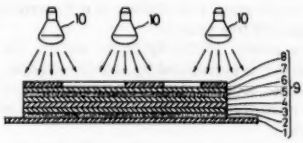
Jun Masaki, 9-11, Yamaashiya-cho, Ashiya-shi, Hyogo-ken, Japan

Division of Ser. No. 581,829, Feb. 21, 1984,. This application Sep. 14, 1984, Ser. No. 650,280

Claims priority, application Japan, Mar. 31, 1983, 58-57029; Oct. 31, 1983, 58-204588

Int. Cl.⁴ G03C *1/90;* G03F *7/10;* C03C *15/00;* B44C *1/22*

U.S. Cl. 430—258 **1 Claim**



1. A method of manufacturing a transfer sheet with a color pattern having metallic luster comprising the steps of:

(I) forming a mold-removing film layer on one side of a transparent or semi-transparent base film;

(II) forming a semi-aqueous transparent coloring agent layer on said mold-removing film layer;

(III) forming a vapor-coated aluminum layer on said transparent coloring agent layer;

(IV) forming a protective film layer with an oily ink on said vapor-coated aluminum layer;

(V) forming an adhesive layer with an oily paste on said oily protective film layer; and

(VI) placing an original film in which the desired pattern is negative on said sensitizer layer in close contact therewith, irradiating light rays onto said original film for printing, and removing said original film;

(VII) washing in water the base sheet obtained according to the steps (I) to (VI), thereby dissolving and removing unexposed portions of said aqueous sensitizer layer other than the exposed and solidified portions thereof;

(IX) washing in an oily solvent said base sheet, thereby dissolving and removing portions of said oily adhesive layer and said oily protective film layer other than those portions thereof located under the exposed and solidified portions of said sensitizer layer;

(X) removing the exposed and solidified portions of said sensitizer layer, and applying etching to said base sheet with the use of a suitable solvent, thereby dissolving and

removing portions of said vapor-coated aluminum layer other than those portions thereof located under the remaining portions of said oily adhesive layer and said oily protective film layer.

4,552,830

CARBONYLIC HALIDES AS ACTIVATORS FOR PHOTOTROPIC COMPOSITIONS

Edward J. Reardon, El Toro, and Melvin A. Lipson, Fullerton, both of Calif., assignors to Dynachem Corporation, Tustin, Calif.

Continuation of Ser. No. 317,954, Nov. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 195,168, Oct. 8, 1980, abandoned, which is a continuation of Ser. No. 7,095, Nov. 23, 1979, abandoned, which is a continuation of Ser. No. 904,144, May 9, 1978, abandoned. This application Nov. 25, 1983, Ser. No. 555,444

Int. Cl.[4] G03C *1/68, 1/52*

U.S. Cl. 430—281 **63 Claims**

1. A phototropic photosensitive composition which comprises:

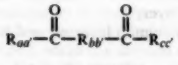
A. at least one compound which contains at least one polymerizable ethylenically unsaturated group of the structure

capable of curing, cross linking or polymerizing under the influence of free radicals,

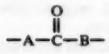
B. a free radical producing photo initiator for said compound that is potentiated by actinic radiation,

C. a fluoran compound colorformer capable of becoming more intensely colored upon contact with a color activator, and

D. a latent activator, present in an effective amount to activate the colorformer under the influence of actinic radiation, comprising a proton donor and a halogenated diamide of a dicarboxylic acid, in which the said halogenated diamide of a dicarboxylic acid has the formula



where $R_{aa'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; $R_{bb'}$ is a covalent bond, alkylene or haloalkylene of one to 4 carbon atoms or the group



wherein A and B each independently is alkylene or haloalkylene of one to 4 carbon atoms; and $R_{cc'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; and wherein at least one of $R_{aa'}$, $R_{bb'}$, and $R_{cc'}$, is halogenated.

38. A phototropic photosensitive composition which comprises:

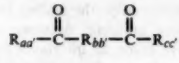
A. at least one compound which contains at least one polymerizable ethylenically unsaturated group of the structure

capable of curing, cross linking or polymerizing under the influence of free radicals,

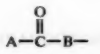
B. a free radical producing photo initiator for said compound that is potentiated by actinic radiation,

C. a colorformer capable of becoming more intensely colored upon contact with a color activator, said colorformer comprising the free base of a dyestuff whose halide salt is more intensely colored than the free base, and

D. at latent activator, present in an effective amount to activate the colorformer under the influence of actinic radiation comprising a proton donor and a halogenated diamide of a dicarboxylic acid. in which the said halogenated diamide of a dicarboxylic acid has the formula:



where $R_{aa'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; $R_{bb'}$ is a covalent bond, alkylene or haloalkylene of one to 4 carbon atoms or the group



where A and b each independently is alkylene or haloalkylene of one to 4 carbon atoms; and $R_{cc'}$ is amino that is unsubstituted or substituted by one or two of lower alkyl or halogenated lower alkyl; and wherein at least one of $R_{aa'}$, $R_{bb'}$, and $R_{cc'}$ is haogenated.

4,552,831

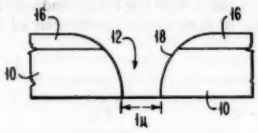
FABRICATION METHOD FOR CONTROLLED VIA HOLE PROCESS

Cheng-Yih Liu, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1984, Ser. No. 576,991

Int. Cl.[4] G03C *5/00;* **B05D** *3/06*

U.S. Cl. 430—296 **7 Claims**



1. A method for forming via holes having a rounded sidewall profile comprising the steps of:

providing a layer of organic positive photoresist on the insulation layer,

exposing said photoresist layer to a formic gas plasma,

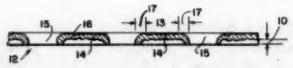
bombarding the surface of said photoresist layer with ions and electrons in a high voltage biased environment in which said photoresist layer is capacitively coupled whereby the solubility of the upper portion of said photoresist layer in a developer solution is increased,

imagewise exposing said photoresist layer to UV light, and developing said photoresist layer.

4,552,832
SHEAR FOIL HAVING PROTRUSIONS ON ITS SKIN-CONTACTING SURFACE THEREOF

Friedrich Blume, Schwalbach, and Lutz Voigtmann, Ober-Mörlen, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,909
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208081
Int. Cl.⁴ G03C *5/00*; B26B *19/04*
U.S. Cl. 430—320 **9 Claims**



1. A method for producing a shear element having protrusions on the skin-contacting surface thereof, comprising the steps of:

coating an electrically conductive surface with a photoresist;

exposing said photoresist to a hole pattern and developing said photoresist to produce a grid pattern wherein said electrically conductive surface is exposed, said grid pattern defining hole areas wherein said electrically conductive surface is covered by islands of photoresist of a predetermined thickness;

introducing irregularities into the surface elevation of said exposed grid, said surface irregularities being of lesser dimension than the thickness of said photoresist islands;

depositing an intermediate foil onto said exposed grid overlying said introduced surface irregularities, said intermediate foil being of sufficient thickness to extend above said photoresist islands when deposited;

depositing a shear foil overlying said intermediate foil; and

removing said shear foil from said intermediate foil;

whereby there is produced a shear foil having protrusions on the skin-contacting surface thereof but having relatively smooth surfaces in the regions surrounding shear openings which are disposed on said shear foil in correspondence with the positioning of said photoresist islands.

4,552,833
RADIATION SENSITIVE AND OXYGEN PLASMA DEVELOPABLE RESIST

Hiroshi Ito; Scott A. MacDonald; Robert D. Miller, and Carlton G. Willson, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1984, Ser. No. 609,690
Int. Cl.⁴ G03C *5/16, 1/72*
U.S. Cl. 430—325 **14 Claims**

1. A process for generating a negative tone resist image comprising the steps of:

(1) coating a substrate with a film of a polymer that contains a masked reactive functionality;

(2) imagewise exposing said film to radiation under conditions that cause unmasking of the reactive functionality in the exposed regions of the film;

(3) treating the exposed film with a reactive organometallic reagent; and

(4) developing the relief image by treatment with an oxygen plasma.

2. A process as claimed in claim 1 wherein the masking group is removed directly by exposure to radiation.

3. A process as claimed in claim 1 wherein the polymer contains an acid labile group pendant from the polymer backbone, and the film contains a monomeric species that liberates acid upon exposure.

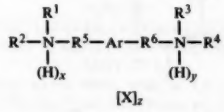
4,552,834
ENHANCED BLEACHING OF PHOTOGRAPHIC ELEMENTS CONTAINING SILVER HALIDE AND ADSORBED DYE

Philip T. S. Lau, and Gary M. Einhaus, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 638,005, Aug. 6, 1984, abandoned. This application Mar. 28, 1985, Ser. No. 717,256
Int. Cl.⁴ G03C *7/00, 5/44, 5/42*
U.S. Cl. 430—393 **32 Claims**

1. In a process of bleaching from a photographic element silver produced by development of silver halide having a dye adsorbed to its surface comprising employing a ferric complex of a polycarboxylic acid as a bleaching agent,

the improvement comprising bleaching in the presence of a bleach enhancing amount of a compound of the formula:



wherein

Ar is an aromatic linking group,

R^1, R^2, R^3, and R^4 are hydroxy substituted lower alkyl groups,

R^5 and R^6 are lower alkanediyl groups,

X is a charge balancing counter ion,

x and y are 0 or 1, and

z is 0, 1, or 2.

4,552,835
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT HAVING A LIGHT INSENSITIVE UPPER LAYER

Taku Nakamura, and Yasuo Kasama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1984, Ser. No. 620,773
Claims priority, application Japan, Jun. 17, 1983, 58-108688
Int. Cl.⁴ G03C *1/94*
U.S. Cl. 430—523 **14 Claims**

1. A silver halide photographic light-sensitive element for use in a photomechanical process comprising a support, at least one light-sensitive silver halide emulsion layer on the support, and at least one light-insensitive upper layer on the light-sensitive silver halide emulsion layer, wherein at least one light-insensitive upper layer contains a binder, a gelation hardening agent and a polymer comprising:

(a) at least 10 mol% of a monomer unit containing at least one group having an electric change, wherein said group is selected from groups which contain an anionic charge, a cationic charge and an amphoteric charge; and

(b) at least 0.1 mol% of a monomer unit having a functional group capable of cross-linking through a gelatin hardening agent with a like functional group of another polymer chain of the same type or with gelatin, wherein said functional group is a nucleophillic group,

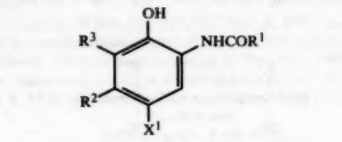
wherein the light-insensitive upper layer contains the polymer in an amount of 3 to 100% by weight based on the weight of the binder.

4,552,836
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

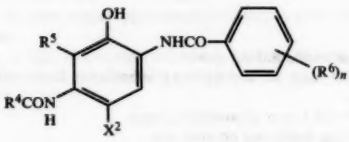
Osami Tanabe; Kozo Aoki; Akira Ogawa, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1984, Ser. No. 601,886
Claims priority, application Japan, Apr. 21, 1983, 58-70604
Int. Cl.[4] G03C *7/26*
U.S. Cl. 430—549 **10 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a cyan dye forming coupler represented by the following general formula (I) and a cyan dye forming coupler represented by the following general formula (II):



(I)



(II)

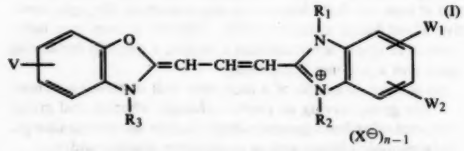
wherein R^1 and R^4 each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group, R^2, R^3 and R^5 each represents a hydrogen atom, a halogen atom or a substituted or unsubstituted alkyl or aryl group, R^6 represents a group with which a benzene ring can be substituted, X^1 and X^2 each represents a group which can be released upon an oxidative coupling reaction with a developing agent, R^4 and R^5 may combine together to form a 5-membered or 6-membered ring, and n represents an integer of 1 to 5.

4,552,837
SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Masaki Okazaki; Osami Tanabe; Satoshi Nagaoka; Yuji Mihara, and Toshinao Ukai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

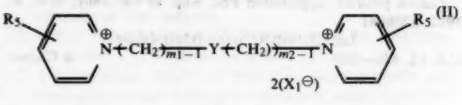
Filed Apr. 11, 1984, Ser. No. 598,945
Claims priority, application Japan, Apr. 11, 1983, 58-63408
Int. Cl.[4] G03C *7/26, 1/02*
U.S. Cl. 430—550 **17 Claims**

1. A silver halide color photographic emulsion containing at least one sensitizing dye represented by formula (I), and at least one compound represented by formula (II), wherein formula (I) is



(I)

wherein V is a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, a phenyl group, a carboxyl group, a hydroxyl group, an alkoxycarbonyl group or forms a condensed benzene ring; W_1 and W_2 may be the same or different and are each a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a substituted carbamoyl group, a sulfamoyl group, a substituted sulfamoyl group, a cyano group, a trifluoromethyl group, a hydroxyl group, or an alkylsulfonyl group; R_1, R_2 and R_3 may be the same or different and are each an alkyl group or a substituted alkyl group, provided that at least one of R_2 and R_3 is a substituted alkyl group containing a sulfo group or a carboxyl group; X is an acid anion; and n is 1 or 2; and wherein formula (II) is



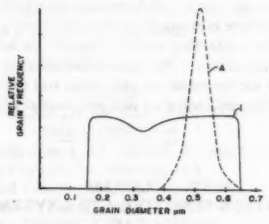
(II)

wherein R_5 is a hydrogen atom, a halogen atom, an alkyl group, an alkoxycarbonyl group, an acyloxy group, an alkoxyl group, an amino group, a substituted amino group, an acyl amide group, an alkane sulfonyl amide group or a carbamoyl group; Y is alkylene, arylene, aralkylene, —COO—, or —$COOY_1$—OCO—, where Y_1 contains from 1 to 18 carbon atoms and is alkylene, arylene, or aralkylene; X_1 is an anion; and m_1 and m_2 may be the same or different and are each an integer of from 1 to 19, and wherein said emulsion contains a color forming material.

4,552,838
PROCESSES FOR THE PREPARATION OF SILVER HALIDE EMULSIONS OF CONTROLLED GRAIN SIZE DISTRIBUTION, EMULSIONS PRODUCED THEREBY, AND PHOTOGRAPHIC ELEMENTS

Jong-Shinn Wey, Penfield; Thomas E. Whiteley, Rochester, and James M. Hamlin, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1984, Ser. No. 611,774
Int. Cl.[4] G03C *1/02, 1/00*
U.S. Cl. 430—569 **35 Claims**



1. In a process for the preparation of a photographic silver halide emulsion comprised of concurrently introducing silver and halide ions into a reaction vessel containing a dispersing medium to produce radiation sensitive silver halide grains,

the improvement comprising producing a predetermined size distribution of the radiation sensitive silver halide grains, including selection of maximum and minimum grain diameters and selection of the distribution of grains of maximum, minimum, and intervening diameters, by the steps of

introducing into the reaction vessel a silver halide emulsion consisting essentially of a dispersing medium and stable silver halide grains forming an initial population of host grains capable of acting as deposition sites for the silver and halide ions,

introducing into the reaction vessel the silver and halide ions without producing additional stable silver halide grains, thereby depositing silver halide onto the host grains in the reaction vessel to increase their diameters,

continuing and regulating introduction into the reaction vessel of the silver halide emulsion consisting essentially of the dispersing medium and the stable silver halide

grains to provide additional host grains during the course of introducing the silver and halide ions and thereby obtaining the predetermined size distribution of the radiation-sensitive silver halide grains in the photographic emulsion,

controlling the minimum diameter of the radiation sensitive silver halide grains in the emulsion by controlling the diameter of the silver halide host grains introduced, and

terminating silver halide grain growth when deposition onto the initial population of host grains has produced radiation sensitive silver halide grains of the desired maximum diameter.

4,552,839

DETERMINATION OF ANALYTES IN PARTICLE-CONTAINING MEDIUM

Dennis R. Gould, El Granada, and Robert F. Zuk, Menlo Park, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 1, 1983, Ser. No. 519,300
Int. Cl.⁴ G01N *33/54, 1/48, 33/52*
U.S. Cl. 435—7 **9 Claims**

1. A method for detecting the presence of a member of a specific binding pair ("sbp member") in a liquid assay medium, said specific binding pair consisting of ligand and homologous receptor, where said method involves particles to which are bound at least one member of a specific binding pair, a solid bibulous member and a signal-producing system which involves at least one label which is bound to said particles or an sbp member,

said method comprising:

combining in an aqueous assay medium, said sample and at least one of said particles and labeled sbp members, with the proviso that particles are added when said sample lacks particles having an sbp member; under conditions where particles only within a predetermined size, range and charge will concentrate in an area on said bibulous member adjacent the air/liquid interface, when said bibulous member is contacted with said assay medium;

contacting said bibulous member with said assay medium, whereby said assay medium is wicked past said area and particles within said predetermined size and charge concentrate at a small site in said area; and

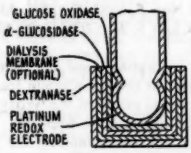
detecting the signal as a result of said signal-producing system, wherein said signal is related to the amount of label in said area and the amount of label in said area is related to the amount of said sbp member in said sample.

4,552,840

ENZYME ELECTRODE AND METHOD FOR DEXTRAN ANALYSIS

Richard Riffer, Crockett, Calif., assignor to California and Hawaiian Sugar Company, San Francisco, Calif.

Filed Dec. 2, 1982, Ser. No. 433,255
Int. Cl.⁴ C12Q *1/54, 1/34, 1/30, 1/28;* **C12N** *11/18, 11/12, 11/06;* **C12M** *1/40, 1/34*
U.S. Cl. 435—14 **12 Claims**



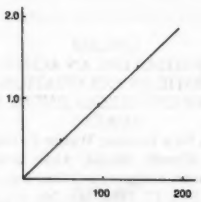
1. An electrode for the potentiometric determination of dextran in a solution comprising a platinum redox electrode, a first cellulose absorbent sheath surrounding the electrode with immobilized glucose oxidase, a second absorbent sheath thereover with immobilized enzymes selected from the group consistinng of α-glucosidase and isomaltase, with the provision that a means for excluding compounds having a molecular weight of 14,000 or greater surrounding said second sheath is included when α-glucosidase is selected and when the solution contains starch and an outer absorbent sheath with immobilized dextranase surrounding said means wherein the amounts of glucose oxidase, α-glucosidase or isomaltase and dextranase are sufficient to determine the amount of dextran.

4,552,841

N-ACETYL-β-D-GLUCOSAMINIDES FOR DETERMINING N-ACETYL-β-D-GLUCOSAMINIDASE ACTIVITY

Yasunao Ogawa; Akira Noto, both of Osaka; Sachio Mori, Hyogo, and Mitsuru Yoshioka, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 357,317, Mar. 11, 1982, Pat. No. 4,433,139.
This application Apr. 21, 1983, Ser. No. 487,703
Int. Cl.⁴ G01N *31/14*
U.S. Cl. 435—18 **1 Claim**



1. A kit for diagnostic aid consisting of the following articles

(i) a substrate reagent which is a lyophilized product of sodio-m-cresolsulfonphthaleinyl N-acetyl-β-D-glucosaminide;

(ii) a buffer agent selected from the group consisting of citrate buffer, borax-citrate buffer, and citrate acid-phosphate buffer;

(iii) an alkaline agent selected from the group consisting of sodium carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, and borate-sodium carbonate.

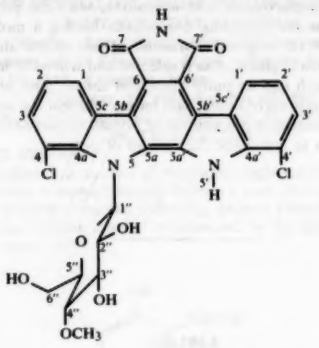
4,552,842

PROCESS FOR PRODUCING REBECCAMYCIN

Donald E. Nettleton, Jr., Jordan; James A. Bush, Fayetteville; William T. Bradner, Manlius, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 461,817, Jan. 28, 1983, Pat. No. 4,487,925.
This application Apr. 13, 1984, Ser. No. 599,918
Int. Cl.⁴ C12P *19/60;* **C12R** *1/365*
U.S. Cl. 435—75 **2 Claims**

1. A process for producing rebeccamycin having the formula



I

which comprises cultivating *Nocardia aerocolonigenes* ATCC 39243 or a rebeccamycin-producing mutant thereof in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions until a substantial amount of rebeccamycin is produced by said organism in said culture medium.

4,552,843

PROCESS FOR PRODUCING AN ACIDIC POLYCYCLIC ETHER ANTIBIOTIC BY CULTIVATION OF A NOVEL STRAIN OF *STREPTOMYCES ENDUS* SUBSPECIES *AUREUS*

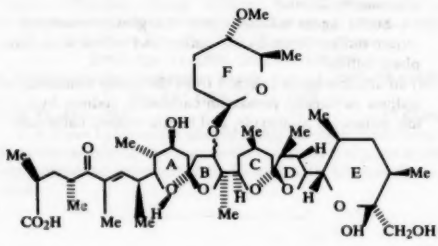
Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Hiroshi Maeda, Aichi, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,384

Int. Cl.[4] **C12P** *19/62, 17/18;* **C12N** *1/20;* **C12R** *1/465*

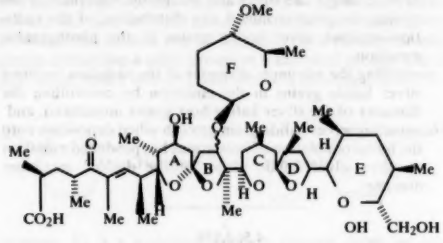
U.S. Cl. 435—76 **4 Claims**

1. A process for producing the antibiotic of the formula:



wherein Me is methyl; or a pharmaceutically acceptable cationic salt thereof, which comprises cultivating *Streptomyces endus* subsp. *aureus,* ATCC-39574, having the ability to produce said antibiotic or a pharmaceutically acceptable cationic salt thereof, in an aqueous culture medium, containing an assimilable source of carbon, nitrogen and inorganic salts, under submerged, aerobic fermentation conditions, until a recoverable amount of said antibiotic, or a pharmaceutically acceptable cationic salt thereof, is obtained, and recovering said antibiotic or pharmaceutically acceptable salt thereof.

3. A biologically pure culture of a strain of the species *Streptomyces endus* subsp. *aureus,* having the identifying characteristics of ATCC-39574, said microorganism being capable of producing the antibiotic of the formula:



wherein Me is methyl; or a pharmaceutically acceptable cationic salt thereof, in recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts.

4,552,844

PLANT GROWTH MEDIUM

Nicholas P. Everett, El Sobrante, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 15, 1983, Ser. No. 504,355

Int. Cl.[4] **C12N** *5/00, 5/02;* **C12P** *21/00;* **G01N** *33/54*

U.S. Cl. 435—240 **6 Claims**

1. The method of screening sunflower seed lines for high oil content comprising:

(a) providing sunflower tissue from seed lines whose oil content is to be screened;

(b) providing a plant growth medium comprising:

(1) minimal salts;

(2) vitamins comprising;

inositol

thiamine HCL

nicotinic acid

pyridoxine HCl

(3) plant hormones;

(4) sucrose; and

(5) coconut water,

said medium being a sunflower cell suspension culture medium;

(c) culturing said tissue in said cell suspension culture medium for a period sufficient to obtain good cell growth; and

(d) selecting as high oil content producers those sunflower seed lines that show good cell growth wherein good cell growth is defined as about a five-fold increase in the packed cell volume of said sunflower tissue after a two week growth period.

4,552,845

METHOD FOR SEPARATING LYSOZYME FROM EGG-WHITE

Lorne S. Reid, 3304 W. Third Ave., Vancouver, British Columbia, Canada V6R 1L4

Filed Nov. 5, 1982, Ser. No. 439,408

Int. Cl.[4] **C12N** *9/36;* **C07G** *7/00;* **C08L** *5/00*

U.S. Cl. 435—206 **32 Claims**

1. A method for separating lysozyme from egg-white which has a lysozyme fraction and an albumin fraction, without destroying the commercial utility of the lysozyme fraction or the albumin fraction, comprising the steps of:

(a) preferentially, reversibly binding the lysozyme fraction to an affinity resin at about the natural pH of the egg-white by contacting the egg-white with the resin;

(b) separating the albumin fraction from the resin to leave the lysozyme fraction bound to the resin and to obtain an albumin fraction of commercial value; and

(c) eluting the bound lysozyme from the resin to obtain a lysozyme solution and a reusable resin.

4,552,846

ASPARTASE FROM A *BACILLUS SUBTILIS*

Yoshihisa Tsuda, Wilmette, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 19, 1984, Ser. No. 572,108
Int. Cl.[4] C12N *9/88, 1/20;* C12R *1/125*
U.S. Cl. 435—232 6 Claims

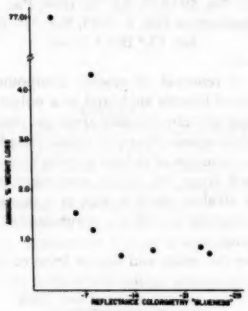
1. A biologically pure culture of a strain of *Bacillus subtilis* NRRL B-15536, said culture being capable of producing in a nutrient medium containing a sugar a recoverable amount of an aspartase.

4,552,847

VISUAL QUALITY CONTROL METHOD FOR BARRIER TREATED CONTAINERS

Bernard D. Bauman, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 28, 1983, Ser. No. 536,602
Int. Cl.[4] G01N *15/08, 33/44*
U.S. Cl. 136—5 10 Claims



1. A method for qualitatively distinguishing between a solid surface or object, which has been treated by exposure to fluorine gas, to have a measurably reduced level of permeability to a nonpolar fluid relative to a surface or object not treated with fluorine, comprising the steps of:

(a) exposing the surface or object being tested to a dilute solution of crystal violet for a fixed period of time,

(b) separating the surface or object being tested from the crystal violet solution and

(c) observing visually or instrumentally the extent to which the crystal violet has adhered to or penetrated into the surface or object, whereby uptake of the crystal violet indicates the measurably reduced level of permeability.

4,552,848

MACROMOLECULE DETERMINATION BY PHYSICAL DEVELOPMENT

Joseph S. Yudelson, and Thomas M. Johnson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 16, 1983, Ser. No. 495,216
Int. Cl.[4] G01N *33/68*
U.S. Cl. 436—86 10 Claims

1. A method for determining macromolecules in polyacrylamide gels, said method comprising the steps of

(a) forming a latent stain image by nucleating the macromolecules in the gel with a palladium tetramine salt and

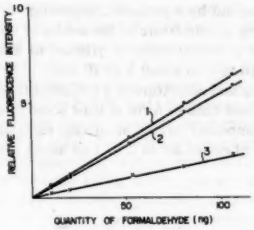
(b) developing the latent stain image by treating the gel with a physical developer solution comprising dimethylamine borane and a member selected from the group consisting of a transition metal salt and a tetrazolium salt.

4,552,849

METHOD FOR DETERMINATION OF FORMALDEHYDE

Motoo Nakajima, Noda, Japan, assignor to Kikkoman Corporation, Japan

Filed Jul. 18, 1984, Ser. No. 632,000
Claims priority, application Japan, Jul. 26, 1983, 58-135168
Int. Cl.[4] G01N *21/64, 21/77*
U.S. Cl. 436—130 4 Claims



1. In a method of formaldehyde determination by measuring the fluorescence of a fluorescent substance formed by the reaction of a formaldehyde-containing solution with a fluorescence reagent capable of forming said fluorescent substance by the reaction with formaldehyde, the improvement which comprises using as said fluorescence reagent a compound represented by the general formula $CH_3C(NH_2)=CHCO_2R$, wherein R represents an alkyl group having 1 to 4 carbon atoms.

4,552,850

GLASSES AND METHODS FOR MAKING THEM

Sally Partington, Bradfield, Nr. Manningtree, and Steven F. Carter, Ipswich, both of England, assignors to British Telecommunications, London, England

Filed Dec. 2, 1982, Ser. No. 446,401
Claims priority, application United Kingdom, Dec. 3, 1981, 8136502
Int. Cl.[4] C03C *3/10*
U.S. Cl. 501—37 13 Claims

1. A glass suitable for use in the core of an optical fibre and having a composition such that it is not subject to devitrification or phase separation, which glass

has a refractive index in the range from 1.540 to 1.610 and

comprises the five components Na_2O, B_2O_3, BaO, SiO_2, and ZrO_2 and not more than 5 weight percent of any further components taken together relative to the said five components taken together,

the molar ratio $Na_2O:B_2O_3$ being in the range from 1.1:1 to 1.5:1,

the proportion of BaO being in the range from 2 to 12 mole percent relative to the said five components taken together,

the proportion of SiO_2 being in the range from 40 to 63 mole percent relative to the said five components taken together,

the proportion of ZrO_2 being in the range from 1.5 to 15 mole percent relative to the said five components taken together, and

the proportion of SiO_2 and ZrO_2 taken together being not more than 65 mole percent relative to the said five components taken together.

4,552,851

FORMATION OF YTTRIUM ALUMINATE AS SINTERING AID FOR SILICON NITRIDE BODIES

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 2, 1984, Ser. No. 606,047
Int. Cl.[4] C04B 35/58
U.S. Cl. 501—98 6 Claims

1. In a process for producing silicon nitride bodies wherein a sintering aid is used, the improvement comprising forming said sintering aid by a process comprising:

(a) forming an admixture of the oxides of yttrium and aluminum in a weight ratio of yttrium to aluminum of from about 10 to 1 to about 1 to 10 and

(b) heating said admixture at a sufficient temperature and for a sufficient time to form at least some of a yttrium aluminum compound having an atomic ratio of yttrium to aluminum of either about 2 to 1 or about 3 to 5.

4,552,852

ALUMINA CERAMIC COMPRISING A SILICEOUS BINDER AND AT LEAST ONE OF ZIRCONIA AND HAFNIA

William R. Manning, Richmond, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jun. 27, 1984, Ser. No. 625,095
Int. Cl.[4] C04B 35/10, 35/48
U.S. Cl. 501—105 12 Claims

1. A ceramic composed of from 1 to 15 percent of glass and 99 and 85 percent of a mixture of particulate Al_2O_3 and at least one other particulate material selected from the group consisting of ZrO_2, HfO_2, ZrO_2—HfO_2 solid solutions and Y_2O_3, the particulates all being finer than 15 microns in ultimate particle size, ZrO_2, HfO_2 and Y_2O_3 constituting from 15 to 25 percent based upon the weight of ZrO_2, HfO_2, Y_2O_3 and Al_2O_3 in the ceramic, Y_2O_3 constituting up to 12 percent based upon the weight of the ZrO_2, HfO_2 and Y_2O_3, and said glass constituting a vitreous phase bonding the mixture of particulates into a dense, gas impervious structure, and being a calcium magnesium silicate glass containing from 45 to 80 percent of SiO_2, from 8 to 55 percent of CaO and MgO, and not more than 15 percent of Al_2O_3.

8. A method for producing a ceramic, said method comprising pressing a batch into a desired shape, firing the shape to a temperature from about 1350° to about 1650° to mature the ceramic, cooling the ceramic, and refiring the ceramic to a temperature of at least about 870° but not so high that the ceramic is subject to microcracking upon standing under ambient temperatures, said batch being one which, after firing of the shape to about 1350° to about 1650° to maturity, produces a ceramic composed of from 1 to 15 percent of glass and 99 to 85 percent of a mixture of particulate Al_2O_3 and at least one other particulate material selected from the group consisting of ZrO_2, HfO_2, ZrO_2—HfO_2 solid solutions and Y_2O_3, the particulates all being finer than 15 microns in ultimate particle size, ZrO_2, HfO_2 and Y_2O_3 constituting from 15 to 25 percent based upon the weight of ZrO_2, HfO_2, Y_2O_3 and Al_2O_3 in the ceramic, Y_2O_3 constituting up to 12 percent based upon the weight of the ZrO_2, HfO_2 and Y_2O_3, and said glass being a calcium magnesium silicate glass containing from 45 to 80 percent of SiO_2, from 8 to 55 percent of CaO and MgO, and not more than 15 percent of Al_2O_3.

9. A ceramic produced by the method claimed in claim 8, and which is free of microcracks that can be detected by a dye test.

4,552,853

DIELECTRIC CERAMIC COMPOSITION

Kenji Kawabata, and Yukio Sakabe, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 11, 1984, Ser. No. 629,715
Claims priority, application Japan, Jul. 18, 1983, 58-131748
Int. Cl.[4] C04B 35/36
U.S. Cl. 501—134 6 Claims

1. A dielectric ceramic composition comprising, in percent by weight, 32 to 47% $SrTiO_3$, 26.5 to 46% $PbTiO_3$, 8 to 16% $CaTiO_3$, 5 to 16% Bi_2O_3, 3 to 10% TiO_2, 1 to 3.8% ZnO and 1 to 3.8% SiO_2.

4,552,854

REMOVAL OF ARSENIC COMPOUNDS FROM SPENT CATECHOLATED POLYMER

Richard H. Fish, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 597,627, Apr. 6, 1984, Pat. No. 4,518,490.
This application Feb. 8, 1985, Ser. No. 699,886
Int. Cl.[4] B01J 31/40
U.S. Cl. 502—26 10 Claims

1. Process of removal of arsenic compounds which are bound to catechol ligands anchored to a polystyrene-divinylbenzene polymer thereby forming spent polymer comprising:

(a) treating said arsenic-bound-to catecholated polymer with an aqueous solution of at least one carbonate or bicarbonate selected from the group consisting of ammonium, alkali and alkaline earth metals at a temperature in the range of about 20° to 100° C., at substantially atmospheric pressure; and,

(b) separating the solids and liquids from each other.

4,552,855

METAL ZEOLITE CATALYST PREPARATION

Geoffrey A. Ozin, 63 Gormley Ave., Toronto, Canada (M4V 1Y9); Linda F. Nazar, 378 Delaware Ave., Toronto, Canada, and Francois Hugues, 2 Avenue Felix Faure, Apt. 2213, Nanterre, France (9, 92000)

Continuation of Ser. No. 454,886, Dec. 30, 1982, abandoned.
This application Nov. 30, 1983, Ser. No. 556,002
Int. Cl.[4] B01J 29/10
U.S. Cl. 502—74 24 Claims

1. A zeolite-metal catalyst having an effective amount of catalytically active metal in the form of essentially zero-valent clusters of metal atoms, at least 80% of the metal clusters within the zeolite cavity being of a size within about a five Angstrom range.

10. A process of preparing zeolite-metal catalysts having a substantial amount of catalytically active metal deposited in the cavities of the zeolite in zero-valent, small cluster form, which comprises:

vaporizing the metal in the vicinity of an organic liquid solvent which is capable of dissolving the catalytic metal;

dissolving the metal as a labile solvated zero-valent complex in the liquid solvent to form a liquid mixture of solvent and solvated zero-valent metal complex dissolved therein;

contacting said liquid mixture with a solid zeolite crystalline material so as to cause diffusion of the solvated metal complex into the cavities of the zeolite;

removing excess liquid solvent or solution;

and warming the zeolite so as to dissociate the labile solvated metal complex in the cavities and deposit zero-valent small cluster metal therein.

4,552,856

ZEOLITE CATALYST AND PREPARATION THEREOF

Samuel J. Tauster, Englishtown; David E. W. Vaughan, Flemington, and John J. Steger, Pittstown, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1983, Ser. No. 550,898
Int. Cl.[4] B01J *29/12, 29/22*
U.S. Cl. 502—74 8 Claims

1. A process for preparing a catalyst which comprises substantially eliminating moisture from a zeolite L by heating the zeolite, contacting the heated zeolite L with a solution containing at least one Group VIII noble metal, separating a noble metal loaded zeolite from the solution and, calcining the loaded zeolite L at a temperature less than about 400° C.

2. The process of claim 1 wherein the zeolite L is immersed in the noble metal solution for less than about 2 minutes.

3. The process of claim 2 wherein the noble metal is platinum.

4,552,857

CATHODE COATING WITH HYDROGEN-EVOLUTION CATALYST AND SEMI-CONDUCTING POLYMER

Michael Katz, Geneva; Jean Hinden, Chambesy, and Jurgen Gauger, Thonex, all of Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Apr. 5, 1982, Ser. No. 365,185
Claims priority, application United Kingdom, Apr. 9, 1981, 8111256
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.[4] H01M *4/88;* B05D *5/12*
U.S. Cl. 502—101 11 Claims

1. A method of manufacturing a cathode comprising a catalytic coating for electrolytically evolving hydrogen formed on an electrically conductive electrode support, characterized by the steps of:

(a) preparing a homogeneous coating solution containing on one hand a dissolved organic polymer precursor selected from the group consisting of: poly-p-phenylene, polyacrylonitrile, a prepolymer of polybenzimidazo-pyrrolone, and a prepolymer of an adamantane-based polybenzoxazole, and further containing on the other hand a dissolved inorganic precursor compound which can be thermally converted into a catalyst for evolving hydrogen;

(b) applying said homogeneous coating solution in successive layers to said conductive electrode support;

(c) drying each of said layers of the solution applied in step (b), thereby providing a coprecipitated intimate mixture of said catalyst precursor compound and said organic polymer precursor; and

(d) subjecting each dried layer obtained in step (c) to heat treatment comprising at least one stage carried out in air at a temperature in the range from 200° C. to about 600° C., during 5 to 120 minutes, so as to thermally convert said organic polymer precursor to a semi-conducting insoluble polymer and said inorganic precursor compound to said catalyst for evolving hydrogen;

thereby providing the cathode with a consolidated adherent catalytic coating in which said catalyst is finely dispersed and uniformly distributed throughout a matrix consisting of said semi-conducting insoluble polymer formed therewith in situ on said conductive electrode support.

4,552,858

CATALYST COMPONENT FOR POLYMERIZATION OF OLEFINS

Masafumi Imai; Tadashi Yamamoto; Hiroyuki Furuhashi; Hiroshi Ueno, and Naomi Inaba, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,022
Claims priority, application Japan, Aug. 30, 1983, 58-157092
Int. Cl.[4] C08F *4/64*
U.S. Cl. 502—112 22 Claims

1. A catalyst component for the polymerization of olefins obtained by (1) reacting (A) $Mg(OR)(OR')$ with (B) a silicon compound having at least one silicon-hydrogen bond, (2) contacting the reaction product with (C) an electron donor compound, (3) contacting the resulting contact product two or more times with a titanium halide, and (4) between at least one of the multiple titanium halide contacts, contacting the titanium halide contacted solid with a halide of an element selected from the group consisting of elements from Groups IIIa, IVa and Va of the Periodic Table, wherein R and R′ are radicals selected from alkyl, alkenyl, cycloalkyl, aryl and aralkyl radicals and R and R′ may be the same or different.

2. The catalyst component of claim 1 wherein the reaction product obtained from step (3) is contacted with the titanium halide two times and the metal halide employed between the two titanium halide contact steps is selected from the group consisting of BCl_3, BBr_3, BI_3, $AlCl_3$, $AlBr_3$, AlI_3, $GaCl_3$, $GaBr_3$, $InCl_3$, $TiCl_3$, $SiCl_4$, $SnCl_4$, $SbCl_5$, and SbF_5.

4,552,859

OLEFIN POLYMERIZATION CATALYST AND PROCESS

Elliot I. Band, Dobbs Ferry, and Michael J. Breen, Campbell Hall, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 6, 1984, Ser. No. 637,949
Int. Cl.[4] C08F *4/64*
U.S. Cl. 502—127 11 Claims

1. A catalyst for the polymerization of alpha olefins of the formula $CH_2=CHR$, where R is an alkyl radical of 1–6 carbon atoms and mixtures thereof with ethylene, comprising:

(a) a component containing titanium on a magnesium halide support which is obtained by copulverizing magnesium halide with one or more electron donors to form a copulverized product followed by reacting the copulverized product with a liquid titanium compound containing halogen; and

(b) an organoaluminum component comprising a trialkylaluminum compound in admixture with an effective amount of a dialkylaluminoxane component to give improved performance characteristics to the catalyst as compared to when the component consists of trialkylaluminum.

4. A catalyst as claimed in claim 1 wherein a phenol electron donor, polysiloxane, titanium tetrahalide and a carboxylic ester electron donor are copulverized.

4,552,860

CATALYST FOR THE PREPARATION OF UNSATURATED ALDEHYDES AND CARBOXYLIC ACIDS

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 378,294, May 14, 1982, Pat. No. 4,499,301, which is a continuation of Ser. No. 31,819, Apr. 20, 1979, abandoned. This application Sep. 21, 1984, Ser. No. 653,817
Int. Cl.[4] B01J *23/44, 23/48, 23/72, 21/06*
U.S. Cl. 502—242 19 Claims

1. A method for preparing a catalyst useful for the oxidation of propylene to acrolein, acrylic acid, and mixtures thereof wherein the catalyst consists essentially of a metal selected from the group consisting of palladium, gold, silver and copper and a solid acid promoter consisting of a mixture of molybde-

num trioxide and titanium dioxide supported on a carrier which comprises:

Step (a) treating a carrier with a solution containing soluble salts of the solid acid promoter and heating to dryness;

Step (b) calcining the treated carrier in air at a temperature of about 400° C. to 600° C.;

Step (c) treating the calcined carrier with a solution of a compound of said metal and heating to dryness; and

Step (d) contacting the treated carrier with a reducing agent to reduce said metal to the metallic state under conditions whereby the solid acid is not reduced to the metallic state.

4,552,861

PROCESS FOR MANUFACTURING CATALYSTS CONTAINING COPPER, ZINC, ALUMINUM AND AT LEAST ONE METAL FROM THE GROUP FORMED OF RARE EARTHS AND ZIRCONIUM AND THE RESULTANT CATALYSTS FOR REACTIONS INVOLVING A SYNTHESIS GAS

Philippe Courty, Houilles; Daniel Durand, Rueil Malmaison; Christine Travers, Rueil Malmaison; Patrick Chaumette, Rueil Malmaison, and Alain Forestiere, Vernaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 1, 1985, Ser. No. 707,128

Claims priority, application France, Mar. 2, 1984, 84 03325

Int. Cl.[4] B01J *21/04, 23/06, 23/10, 23/72*

U.S. Cl. 502—302 **22 Claims**

1. A process for manufacturing a catalyst comprising at least, as four essential elements: copper, zinc, aluminum and at least one metal selected from the group consisting of rare earths and zirconium, characterized by the following steps of:

(a) contacting a solution of at least one ammonium and/or alkali metal compound, selected from the group consisting of hydrogen carbonates, carbonates and hydroxides with an essentially homogeneous solution containing, as salts or soluble complexes, the assembly of copper, zinc and aluminum metals, said contact taking place at a pH ranging from 6.3 to 7.3 so as to form a precipitate, at least partly crystallized, of copper, zinc and aluminum metals, said precipitate being at least partly formed of hydroxycarbonate,

(b) washing the precipitate obtained in step (a) with water, the obtained product having an alkali metal content reduced to less than about 0.06% by weight with respect to the total metals weight of the precipitate,

(c) contacting a solution containing an ammonium compound selected from the group consisting of the hydrogen carbonate, carbonate and hydroxide, with a solution of a soluble salt and/or complex of at least one metal selected from the group of the rare earths and zirconium, said contact taking place at a pH from 6 to 8, so as to form a precipitate of at least one compound of metal from the group formed of rare earths and zirconium,

(d) washing the precipitate obtained in step (c) with water so as to reduce its nitrogen content to less than 3% by weight with respect to the metals weight,

(e) admixing the precipitate, at least partly crystallized, obtained in step b with the precipitate obtained in step (d), so as to form a substantially homogeneous dispersion,

(f) drying and thermally activating the substantially homogeneous dispersion obtained in step (e).

4,552,862

STABILIZED HYDROGENATION CATALYST AND METHOD OF FORMING THE CATALYST

John M. Larkin, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 7, 1983, Ser. No. 473,168

Int. Cl.[4] B01J *23/14, 23/72, 23/80, 23/86*

U.S. Cl. 502—306 **5 Claims**

1. A method of forming a pelletized catalyst having improved physical stability during a hydrogenation process comprising the steps of mixing an effective amount of a low melting point metal or a hydrogen reducible compound of said low melting point metal selected from the group consisting of cadmium and tin with an effective catalytic hydrogenation material comprising cobalt, copper, and chromium, compressing the mixture to form at least one pellet, said pellet being too large to pass through a No. 8 screen, heating the pellet in a gas comprising hydrogen at a temperature above the melting point of said low melting point metal, and cooling the pellet.

4,552,863

PROCESS FOR THE PRODUCTION OF ACTIVATED CARBON USING WOOD AS A CARBON SOURCE

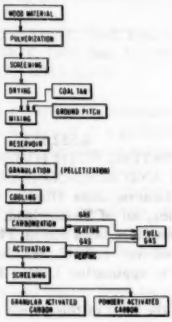
Eiichi Fujimori, Hiroshima, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,254

Claims priority, application Japan, Mar. 10, 1983, 58-38356

Int. Cl.[4] C01B *31/10*; **B01J** *20/20*

U.S. Cl. 502—418 **10 Claims**



1. A process for producing a granular activated carbon using wood as a carbon source, comprising the steps of:

pulverizing wood to produce a wood powder in a fine granular form;

drying the wood powder to produce a dry wood powder having a water content of not more than 10% by weight;

adding a binder mixture of coal tar which is in a viscous fluid state at room temperature and ground pitch which is in a solid state at room temperature in a ratio of coal tar to ground pitch of 2 to 5:7 by weight to the dry wood powder in an amount of from 5 to 20% by weight based on the total amount of the wood powder and the binder to prepare a raw material;

placing the raw material in a pellet mill;

extruding the raw material through a die hole at a temperature of 100° to 170° C. and pressure of 1,000 to 6,000 kg/cm^2 so that it is plasticized and forms a plug flow in the die hole, and simultaneously cutting it to produce pellets;

carbonizing the pellets by heating under conditions so that the pellets do not fuse to each other and do not swell;

activating the carbonized pellets in a high temperature steam atmosphere.

9. A process as claimed in claim 1, wherein the activating is carried out at a temperature in the range of 850° C. to 900° C. for a period of time of between 1.5 and 2 hours while utilizing steam in an amount of between 1.2 and 2.0 kg per kilogram of pellet.

10. A process as claimed in claim 1 wherein the raw material is extruded through a die hole having a diameter in the range of 5 mm to 7 mm and the extruded material is cut to lengths in the range of 10 mm to 15 mm, and by said carbonizing the volume and weight of the extruded pellets are reduced to 40 to 50% of original volume and to 30 to 40% of original weight.

4,552,864

GONADOLIBERIN DERIVATIVES PROCESS FOR THE PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Ferenc Antoni; Judit Erchegyi; Anikó Horváth; Györgi Kéri; Imre Mezö ; Károly Nikolics; János Seprödi; András Széll; Balázs Szöke, and István Teplán, all of Budapest, Hungary, assignors to Reanal Finomvegyszergyar, Budapest, Hungary

PCT No. PCT/HU83/00028, § 371 Date Jan. 11, 1984, § 102(e) Date Jan. 11, 1984, PCT Pub. No. WO83/04250, PCT Pub. Date Dec. 8, 1983

Continuation of Ser. No. 576,396, Jan. 11, 1984, abandoned. This PCT application May 25, 1983, Ser. No. 608,261

Claims priority, application Hungary, May 25, 1982, 1692

Int. Cl.[4] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—15 **6 Claims**

1. A compound of the Formula (I)

Glp-His-Trp-Ser-Tyr-X-Leu-Arg-Pro-Y (I)

wherein

X represents a D-thyroxyl or D-thyronyl group, and

Y stands for a glycine-amide group or an —NH-alkyl group containing 1 to 4 carbon atoms in the alkyl moiety, or a pharmaceutically acceptable acid addition salt or metal complex thereof.

4,552,865

PSYCHOTROPIC DRUGS

Shinji Itoh, Shiga, and Takashi Moroji, Tokyo, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 503,646, Jun. 15, 1983, abandoned, which is a continuation of Ser. No. 293,265, Aug. 17, 1981, abandoned. This application Jul. 11, 1984, Ser. No. 628,964

Claims priority, application Japan, Apr. 7, 1981, 56-52551

Int. Cl.[4] A61K *37/02*

U.S. Cl. 514—15 **7 Claims**

1. A method of treatment of schizophrenia which comprises administering an effective amount of caerulein or a pharmaceutically acceptable salt thereof to a subject requiring that treatment.

4,552,866

USE OF DIAMINO ALCOHOLS AS ANALGESIC AGENTS

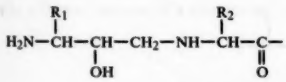
Norma G. Delaney, Princeton, and Eric M. Gordon, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 5, 1984, Ser. No. 628,004

Int. Cl.[4] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 514—16 **15 Claims**

1. A method of relieving pain in a mammalian host suffering therefrom, which comprises administering an effective amount of a compound having the formula



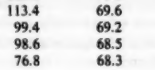
$$-(A_1)_{n1}-(A_2)_{n2}-(A_3)_{n3}-(A_4)_{n4}-(A_5)_{n5}-R_3,$$

or a pharmaceutically acceptable salt thereof, wherein

R_1 and R_2 are each independently hydrogen, alkyl, carboxyalkyl, halo substituted alkyl, hydroxyalkyl, aminoalkyl, mercaptoalkyl, alkylthioalkyl, (cycloalkyl)alkyl, (heteroaryl)alkyl, arylalkyl, carbamoylalkyl, guanidinylalkyl, or heteroaryl;

R_3 is hydroxy, alkoxy, (substituted alkyl)oxy, arylalkoxy, (heteroaryl)alkoxy or $—NY_1Y_2$, wherein Y_1 and Y_2 are each independently hydrogen, alkyl, aryl, or arylalkyl, or Y_1 is hydrogen and Y_2 is substituted alkyl or (heteroaryl)alkyl;

A_1 is glycyl, alanyl, leucyl, phenylalanyl, arginyl, sarcosyl, seryl, asparagyl, lysyl, glutamyl, histidyl, tryptophyl, cysteinyl, methionyl, threonyl, tyrosyl, leucyl, valyl, aspartyl, prolyl, norleucyl, norvalyl, or



$$—NH—(CH_2)_{n6}—C—$$

A_2, A_3, A_4 and A_5 each is independently glycyl, alanyl, leucyl, phenylalanyl, arginyl, sarcosyl, seryl, asparagyl, lysyl, glutamyl, histidyl, tryptophyl, cysteinyl, methionyl, threonyl, tyrosyl, leucyl, valyl, aspartyl, prolyl, norleucyl, or norvalyl; and

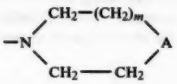
n_1, n_2, n_3, n_4 and n_5 each is independently 0 or 1; and wherein

the terms "alkyl" and "alkoxy" refer to straight and branched chain groups having 1 to 7 carbon atoms;

the term "halo substituted alkyl" refer to alkyl groups in which one, or more, hydrogens have been replaced by chloro, bromo, or fluoro groups;

the term "cycloalkyl" refers to cycloalkyl groups having 3, 4, 5, 6, or 7 carbon atoms;

the term "substituted alkyl" refers to alkyl groups substituted with one, or more, hydroxy or $—NY_3Y_4$ groups wherein Y_3 and Y_4 are the same or different and each is hydrogen or alkyl, Y_3 is hydrogen and Y_4 is aryl, or Y_3 and Y_4 together with the nitrogen atom to which they are attached form a heterocyclic group having the formula



and A is CH—Q, oxygen, or N—Q, Q is hydrogen or alkyl and m is 0 or 1;

the term "heteroaryl" refers to 2- or 3-furanyl, 2- or 3-thienyl, 2-, 3- or 4-pyridinyl, 4-imidazolyl and 3-indolyl; and

the term "aryl" refers to phenyl and phenyl substituted with 1, 2 or 3 alkyl, alkoxy, alkylthio, hydroxy, chlorine, bromine, fluorine, amino, alkylamino, dialkylamino, nitro or trifluoromethyl groups.

4,552,867

ANTIBIOTIC LL-BO1208α AND LL-BO1208β, PROCESS OF PREPARATION, PHARMACEUTICAL COMPOSITION AND METHOD OF USE

John H. E. J. Martin; Jane P. Kirby, both of New City; Donald B. Borders, Suffern; Amedeo A. Fantini, New City, all of N.Y., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 332,079, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 237,197, Feb. 23, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,694

Int. Cl.[4] A61K *37/02, 31/71;* **C12P** *19/12, 21/02*

U.S. Cl. 514—18 **6 Claims**

3. A method of treating bacterial infections in warm-blooded animals comprising administering to said animals an antibacterially effective amount of an antibiotic selected from the group consisting of:

(a) the antibiotic LL-BO1208α wherein the substantially pure form:

(i) exhibits the following significant carbon-13 nuclear magnetic resonance chemical shifts in parts per million relative to the absorption of tetramethylsilane:

182.3	169.0	126.7	71.5	60.9	38.7
178.8	166.6	119.1	70.4	60.2	37.9
178.6	165.9	113.4	69.6	58.3	34.2
177.5	164.7	99.4	69.2	53.8	34.0
173.3	159.2	98.6	68.5	48.7	24.4
173.1	153.7	76.8	68.3	48.3	20.1

-continued

172.7	149.4	75.6	66.0	43.9	16.0
170.4	138.2	74.8	62.2	41.4	13.1
170.2	135.8	74.1	61.5	39.8	12.0

(ii) has an optical rotation $[\alpha]_D^{25}$ of +19;

(iii) has an elemental analysis (percent) of about: C, 43.18; H, 5.74; N, 15.47; S, 3.39;

(iv) has a characteristic carbon-13 nuclear magnetic resonance spectrum substantially as shown in FIG. V;

(v) yields, upon hydrolysis, amino acids which include threonine, α-alanine, 4-amino-3-hydroxy-2-methyl valeric acid, 2,3-diaminopropionic acid, and β-amino-β-(4-amino-6-carboxy-5-methylpyrimidin-2-yl)propionic acid; and

(vi) yields, upon methanolysis, L-gulose and D-mannose; and

(vii) has a characteristic Proton Magnetic Resonance Spectrum substantially as shown in FIG. VI;

and the pharmaceutically acceptable acid-addition salts thereof; (b) the antibiotic LL-BO1208β wherein the substantially pure form:

(i) exhibits the following significant carbon-13 nuclear magnetic resonance chemical shifts in parts per million relative to the absorption of tetramethyl silane:

182.5	159.2	74.7	60.2	37.9
178.8	153.7	74.2	58.3	34.2
178.6	149.3	71.5	53.9	30.3
177.5	138.2	70.4	49.6	24.5
173.5	135.9	69.6	48.6	24.1
173.3	127.1	69.2	45.8	20.1
173.1	119.1	68.5	43.8	16.0
170.3	113.4	68.3	42.0	13.1
169.0	99.4	66.0	41.4	12.0
166.6	98.6	62.2	40.3	
165.9	76.7	61.5	39.8	
164.6	75.6	60.9	38.7	

(ii) has an optical rotation $[\alpha]_D^{25}$ of +17+2;

(iii) has an elemental analysis (percent) of about: C, 44.82; H, 6.50; N, 15.41; S, 3.94;

(iv) has a characteristic carbon-13 nuclear magnetic resonance spectrum substantially as shown in FIG. III;

(v) yields, upon hydrolysis, amino acids which include threonine, β-alanine, 4-amino-3-hydroxy-2-methyl valeric acid, 2,3-diaminopropionic acid, β-lysine, and β-amino-β-(4-amino-6-carboxy-5-methylpyrimidine-2-yl)propionic acid;

(vi) yields, upon methanolysis, L-gulose and D-mannose; and

(vii) has a characteristic Infrared Absorption Spectrum substantially as shown in FIG. I, a characteristic Ultraviolet Absorption Spectrum substantially as shown in FIG. IV, and a characteristic Proton Magnetic Resonance Spectrum substantially as shown in FIG. II; and the pharmaceutically acceptable non-toxic salts thereof; (c) and mixtures thereof.

4,552,868

14-AMINO STEROID DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF AND METHOD OF USE THEREOF

Francois-Xavier Jarreau, Versailles, and Jean-Jacques Koenig, Vernou la Celle, both of France, assignors to Etablissements Nativelle S.A., Paris, France

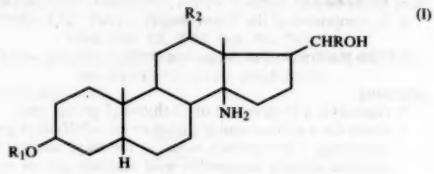
Filed Aug. 18, 1983, Ser. No. 524,500

Claims priority, application France, Aug. 20, 1982, 82 14425; Jun. 20, 1983, 83 10130

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—26 **16 Claims**

1. 14-amino steroid derivatives represented by general formula (I):



(I)

wherein R represents a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms, R_1 represents a substituted or unsubstituted sugar residue, and R_2 represents a hydrogen atom, a hydroxy group or an $—OR_3$ group, wherein R_3 is a substituted or unsubstituted sugar residue, and acid salts thereof.

9. Pharmaceutical compositions comprising a pharmaceutically acceptable amount of at least one 14-amino steroid derivative of claim 1 as an active ingredient and at least one pharmaceutically acceptable diluent or carrier.

4,552,869

O-ALKYL-O-CARBAMOYLGLYCEROPHOSPHOCHOLINES AND THE USE FOR TREATING HYPERTENSION

Hans-Heiner Lautenschläger, Pulheim-Stommeln; Hans Betzing, Kerpen-Horrem; Gerrit Prop, Pulheim, and Ottfried Zierenberg, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

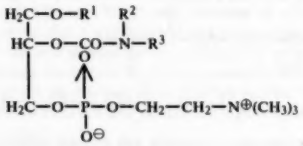
Continuation of Ser. No. 404,716, Aug. 3, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,131

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131782; Aug. 12, 1981, 3131783; Dec. 24, 1981, 3151377; Dec. 24, 1981, 3151378

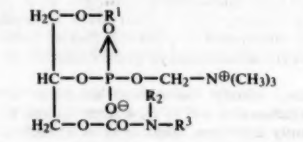
Int. Cl.⁴ A61K *31/685*; C07F *9/10*

U.S. Cl. 514—77 **11 Claims**

1. O-Alkyl-O-carbamoylglycerophosphocholines of the general formulae I or II



I



II

wherein R^1 denotes a straight-chain, saturated or unsaturated hydrocarbon radical having 10–20 C atoms, and R^2 and R^3 can

be identical or different and denote a straight-chain or branched, saturated or unsaturated hydrocarbon radical having 1–20 C atoms, or a hydrogen atom, provided that at least one of R^2 and R^3 is a hydrocarbon radical as defined herein.

11. Process for the treatment of human beings suffering from hypertension wherein a compound according to one of claims **1** to **10** are administered to the human beings so suffering.

4,552,870

S-DITHIOCARBAMOYLMETHYL TRITHIOPHOSPHONATE INSECTICIDES, COMPOSITIONS AND USE

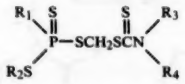
William G. Haag, Pleasant Hill, and Charles G. Chavdarian, Martinez, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 567,489, Jan. 3, 1984,. This application May 10, 1985, Ser. No. 732,338

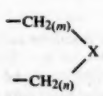
Int. Cl.[4] A01N *57/24;* **C07F** *9/40*

U.S. Cl. 514—89 **9 Claims**

1. A compound having the formula

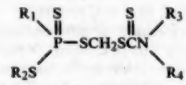


in which R_1 is an alkyl group having from 1 to 3 carbon atoms, R_2 is an alkyl group having from 1 to 6 carbon atoms, and R_3 and R_4 taken together form a ring having the formula

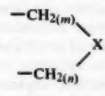


in which m and n are both 2 and X is oxygen or $—CH_2—$.

4. A method for controlling insects comprising applying to said insect or a locus at which control is desired an insecticidally effective amount of a compound having the formula



in which R_1 is an alkyl group having from 1 to 3 carbon atoms, R_2 is an alkyl group having from 1 to 6 carbon atoms, and R_3 and R_4 taken together form a ring having the formula



in which m and n are both 2 and X is oxygen or $—CH_2—$.

4,552,871

STEROIDS OF THE 20-SPIROXANE SERIES, PROCESSES FOR THE MANUFACTURE THEREOF, PHARMACEUTICAL PREPARATIONS CONTAINING SUCH COMPOUNDS AND THE USE OF THE LATTER

Jürgen Grob, Giebenach, and Jaroslav Kalvoda, Binningen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

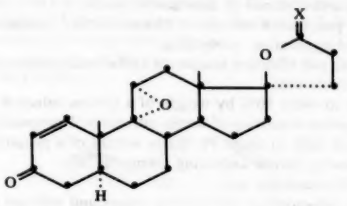
Filed Apr. 9, 1984, Ser. No. 598,132

Claims priority, application Switzerland, Apr. 13, 1983, 1979/83

Int. Cl.[4] A61K *31/58;* **C07J** *9/00*

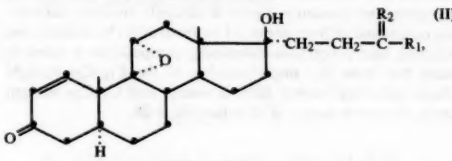
U.S. Cl. 514—172 **24 Claims**

1. (5α)-20-spirox-1-en-3-ones of the formula



(I)

in which X represents O or H_2, and 17-hydroxy-5α,17α-pregn-1-en-3-ones of the formula



(II)

in which R_2 represents O and R_1 represents OH, OMe, OAlk, NH_2, NHR_3, NR_3R_4, or R_2 represents H_2 and R_1 represents OH, OAlk, OAr, OAralk or OAc, wherein R_3, R_4 and Alk represent lower alkyl, Me represents a metal atom or metal equivalent or the cation of an organic base, Ar represents monocyclic aryl, Aralk represents monocyclic aryl-lower alkyl, and Ac represents lower alkanoyl, monocyclic aroyl, lower alkylsulphonyl or monocyclic arylsulphonyl, it being possible for R_3 together with R_4 also to represent a lower alkylene group optionally interrupted by a hetero atom.

22. A pharmaceutical composition containing

(a) an effective aldosterone-antagonistic amount of a compound according to claim **1**, and

(b) at least one diuretic which promotes the increased excretion of sodium and potassium electrolytes.

4,552,872

PENETRATING TOPICAL PHARMACEUTICAL COMPOSITIONS CONTAINING CORTICOSTEROIDS

Eugene R. Cooper; Maurice E. Loomans, both of Cincinnati, and Mahdi B. Fawzi, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 506,274, Jun. 21, 1983, abandoned. This application Feb. 1, 1984, Ser. No. 576,065

Int. Cl.[4] A61K *31/58, 31/56*

U.S. Cl. 514—175 **34 Claims**

1. A penetration-enhancing pharmaceutical composition for topical application, comprising:

(a) a safe and effective amount of a pharmaceutically-active corticosteroid;

(b) 0% to about 80% by weight of a solvent selected from the group consisting of water, ethanol or 2-propanol; and

(c) about 10% to about 99.9% by weight of a penetration-enhancing carrier consisting essentially of:

(i) a diol selected from the group consisting of 1,2-propanediol, 1-2,-butanediol, 1,3-butanediol, 2,3-butanediol, or mixtures thereof, and

(ii) a cell-envelope disordering compound selected from the group consisting of methyl laurate, oleic acid, myristyl alcohol, or mixtures thereof;

wherein said diol and said cell-envelope disordering compound are present in a ratio of diol:cell-envelope disordering compound of from about 1:1 to about 500:1 by weight; and wherein said penetration-enhancing composition is substantially free from any single member of the C_{16}–C_{20} straight chain, saturated normal fatty alcohols, and C_4–C_{20} straight chain, saturated mono- or dicarboxylic acids.

34. A penetration-enhancing pharmaceutical composition for topical application, comprising:

(a) a safe and effective amount of a pharmaceutically-active corticosteroid;

(b) 0% to about 80% by weight of a solvent selected from the group consisting of water, ethanol or 2-propanol; and

(c) about 10% to about 99.9% by weight of a penetration-enhancing carrier consisting essentially of:

(i) 1,2-butanediol, and

(ii) a cell-envelope disordering compound selected from the group consisting of methyl laurate, oleic acid, oleyl alcohol, monoolein, myristyl alcohol, or mixtures thereof;

wherein said 1,2-butanediol and said cell-envelope disordering compound are present in a ratio of diol:cell-envelope disordering compound of from about 1:1 to about 500:1 by weight; and wherein said penetration-enhancing composition is substantially free from any single member of the C_{16}–C_{20} straight chain, saturated normal fatty alcohols, and C_4–C_{20} straight chain, saturated mono- or dicarboxylic acids.

4,552,873

CARBAPENEM COMPOUNDS, AND COMPOSITIONS CONTAINING THEM

Tetsuo Miyadera; Yukio Sugimura; Toshihiko Hashimoto; Teruo Tanaka; Kimio Iino; Tomoyuki Shibata, and Shinichi Sugawara, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

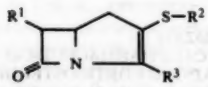
Filed Aug. 13, 1982, Ser. No. 407,914

Claims priority, application Japan, Aug. 19, 1981, 56-129648; May 14, 1982, 57-81067

Int. Cl.[4] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **14 Claims**

1. Compounds of the formula (I):

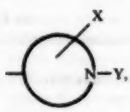


(I)

wherein

R^1 is hydroxyethyl,

R^2 is



wherein

is a 3-pyrrolidinyl group, X is hydrogen and Y is a group of the formula

wherein R^5 and R^6 are the same or different and each is hydrogen or an alkyl group having from 1 to 4 carbon atoms,

R^3 is a carboxy group or a protected carboxy group; and pharmaceutically acceptable salts thereof.

4,552,874

PYRAZOLOOXAZINES, PYRAZOLOTHIAZINES, AND PRYAZOLOQUINOLINES AND THEIR USE AS MEDICAMENTS

Mithat Mardin, Wuppertal; Rudolf Sundermann, Leverkusen; Friedrich Hoffmeister, Wuppertal; Wolf-Dieter Busse, Wuppertal; Harald Horstmann, Wuppertal, and Siegfried Raddatz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

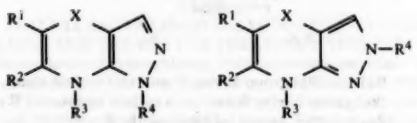
Filed Feb. 1, 1983, Ser. No. 462,864

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204126

Int. Cl.[4] **A61K** *31/535, 31/54;* **C07D** *498/04, 513/04*

U.S. Cl. 514—222 **9 Claims**

1. A compound of the formulae



(I)

Ia Ib

wherein

R^1 and R^2 represent a fused-on carbocyclic aryl or a 5- or 6-membered N—,O— or S— fused-on hetero-aryl ring, which in turn can optionally be substituted by up to 5 identical or different substituents from the group consisting of C_1–C_{18}-alkyl, -alkoxy or -alkylamino; mono- or bicyclic carbocyclic aralkyl having C_1–C_4-alkyl in the alkyl portion; C_4–C_8-cycloalkyl; dialkylamino having 1 to 18 carbon atoms in each alkyl group; carboalkoxy with C_1–C_4 in the alkoxy portion; halogenoalkyl, halogenalkoxy having 1 to 2 carbon atoms in the alkyl or alkoxy portion; X is 0, S, SO, SO_2 or CH_2;

R^3 and R^4 can be identical or different and represent hydrogen, alkyl having 1 to 18 C atoms, it being possible for the alkyl radical to be interrupted once or several times by oxygen, sulphur or nitrogen, alkenyl or alkinyl having 2 to 12 C atoms, aralkyl having 7 to 12 C atoms, it again being possible for the alkenyl, alkinyl and aralkyl radicals to be interrupted once or several times by oxygen, sulphur or nitrogen, aryl having 6 to 10 C atoms, heteroaryl, heteroaralkyl, alkylcarbonyl having 1 to 18 C atoms, heteroarylcarbonyl and arylcarbonyl having 7 to 11 C atoms, it being possible for these radicals optionally to be substituted by up to 5 identical or different substituents from the group comprising alkoxy, alkyl, aralkyl, cycloalkyl, aryl, alkylamino, dialkylamino, arylamino, aryloxy, arylthio, alkylthio, carboxyl, carboalkoxy, cyano, carbamoyl, alkylsulphonyl, halogenoalkyl, halogenoalkoxy, halogen,

amino, hydroxyl, sulphonamido, methylenecarboxyl, methylenecarboxyalkyl or propylenecarboxyalkyl, but with the proviso that:

when X is oxygen,

R^3 is other than hydrogen or alkyl and

R^4 is other than hydrogen or alkyl and,

when X is sulphur,

R^3 is other than hydrogen and R^4 is other than p-chlorophenyl or

R^3 is other than acyl and R^4 is other than aryl.

4. A pharmaceutical composition comprising a lipoxygenase-inhibiting amount of a compound of claim 1 together with an inert pharmaceutical carrier.

4,552,875

NOVEL CARBACYCLINAMIDES, THEIR PREPARATION AND USE AS MEDICINAL AGENTS

Werner Skuballa; Bernd Raduechel; Helmut Vorbrueggen, all of Berlin; Gerda Mannesmann, Cologne; Bob Nieuweboer, and Michael H. Town, both of Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

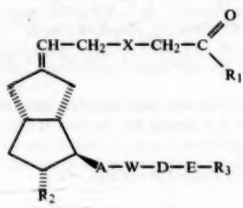
Filed Jul. 1, 1983, Ser. No. 510,125

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3225287

Int. Cl.[4] C07C *177/00*; A61K *31/557*

U.S. Cl. 514—234 **19 Claims**

1. A carbacyclinamide of the formula



wherein

R_1 is NHR_4, wherein R_4 is (a) $-(CH_2)_n-R_8$, (b) C_{2-10}-alkenyl, (c) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; (d) C_{3-10}-cycloalkyl, (e) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, (f) C_{6-10}-aryl, (g) C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4}-alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; or (h) C_{2-8}-alkyl substituted by 1–5 hydroxy groups,

or R_1 or NR_4R_5, wherein R_4 and R_5 each is C_{2-8}-alkyl substituted by 1–5 hydroxy groups or R_4 and R_5 together with the adjoining N-atom form a 5- or 6-membered heterocycle containing up to 1 additional O, S or N atom wherein an additional N-atom can be substituted by C_{1-4}-alkyl,

or R_1 is NR_4R_5 wherein R_4 is (a) C_{1-10}-alkyl, (b) C_{2-10}-alkenyl, (c) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; (d) C_{3-10}-cycloalkyl or (e) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, and R_5 is (a) C_{2-10}-alkenyl, (b) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; (c) C_{3-10}-cycloalkyl, (d) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, (e) C_{6-10}-aryl, (f) C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4}-alkoxy group; or (g) C_{2-8}-alkyl substituted by 1–5 hydroxy groups,

N is 1–4;

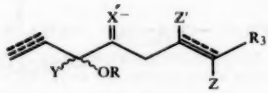
R_8 is $-CONH_2$ or $-N(C_1-C_4\text{-alkyl})_2$;

R_2 is OR:

R_3 is (a) C_{1-10}-alkyl, (b) C_{2-10}-alkenyl, (c) C_{1-10}-alkyl or C_{2-10}-alkenyl each substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; (d) C_{3-10}-cycloalkyl, (e) C_{3-10}-cycloalkyl substituted by C_{1-4}-alkyl, (f) C_{6-10}-aryl, (g) C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; or (h) an aromatic heterocycle of 5 or 6 ring atoms one of which is O, N or S, the remainder being carbon atoms;

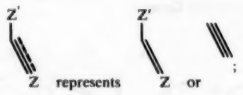
X is —O— or $—CH_2—$;

A-W-D-E-R_3 is

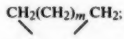


Y is H or CH_3;

represents an α- or β-bond; ═══ represents a single, double or triple bond, the double bond in the 13-position being in the trans-configuration;



$=X^{-'}$ is H, C_{1-3}-alkyl; C_{1-3}-dialkyl; H, H; H, F; or



Z and Z' each is H or C_{1-5}-alkyl;

m is 1–3; and

R is H, tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid.

4,552,876

BISBENZOXAZINES AND PHARMACEUTICAL USE

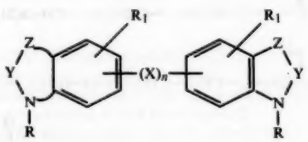
Howard Jones, Ossining; Ernest Magnien, Flushing, both of N.Y.; John H. Musser, Malvern, Pa., and Mujahid L. Shaikh, White Plains, N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,285

Int. Cl.[4] A61K *31/535*; C07D *265/36*

U.S. Cl. 514—234 **23 Claims**

1. A member of the formula:



wherein,

R is H, alkyl, cycloalkyl, aryl, or heteroaryl;

R_1 is H, alkyl, cycloalkyl, aryl, heteroaryl, aralkyl, substi-

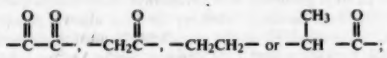
tuted aryl, substituted heteroaryl, halo, OR^2, SR^2, NR_2, CF_3, NO_2, CN, $COOR^2$, CHO, SO_3H, or SO_2NH_2,

wherein,

the substituents in substituted aryl and substituted heteroaryl are H, methyl, ethyl or propyl;

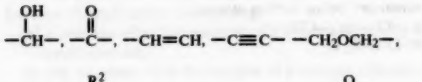
R^2 is H, methyl, ethyl or propyl;

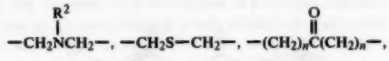
Y is



Z is O;

X is $-CH_2-$,



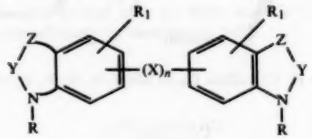


wherein,

R^2 is H, methyl, ethyl or propyl; and

n is 1–10, and pharmaceutically acceptable salts thereof.

13. A pharmaceutical composition for the treatment of allergic or inflammatory conditions comprising as an active ingredient a member of the formula



wherein,

R is H, alkyl, cycloalkyl, aryl, or heteroaryl;

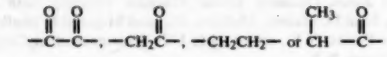
R_1 is H, alkyl, cycloalkyl, aryl, heteroaryl, aralkyl, substituted aryl, substituted heteroaryl, halo, OR^2, SR^2, NR_2, CF_3, NO_2, CN, $COOR^2$, CHO, SO_3H or SO_2NH_2,

wherein,

the substituents in substituted aryl and substituted heteroaryl are H, methyl, ethyl or propyl;

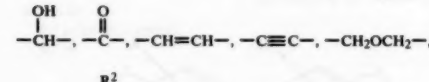
R^2 is H, methyl, ethyl or propyl;

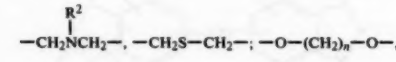
Y is



Z is O;

X is $-CH_2-$,





or $-(CH_2)_nCHOH(CH_2)_n-$;

wherein,

R^2 is H, methyl, ethyl or propyl; and

n is 1–10, or pharmaceutically acceptable salts thereof, in a pharmaceutically acceptable carrier.

4,552,877

N_b-QUATERNARY DERIVATIVES OF SANDWICINE AND ISOSANDWICINE METHODS AND INTERMEDIATE PRODUCTS IN THE MANUFACTURE OF THEIR DERIVATIVES AND METHODS OF USING SAME AND PHARMACEUTICAL COMPOSITIONS THEREOF

Wolfgang Kehrbach, Hanover; Joachim Wegener, Algermissen; Ulrich Kuehl, Hanover; Renke Budden, Hanover, and Gerd Buschmann, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

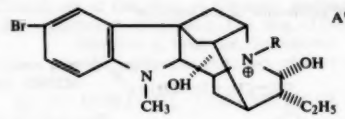
Continuation of Ser. No. 395,649, Jul. 6, 1982, abandoned, which is a continuation of Ser. No. 195,619, Oct. 9, 1980, abandoned. This application May 31, 1984, Ser. No. 615,756

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2941530

Int. Cl.[4] **A61K** *31/435;* **C07D** *455/00, 471/08*

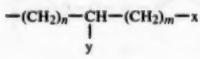
U.S. Cl. 514—239 **8 Claims**

1. A N_b-quaternary 10-bromosandwicine and 10-bromoisosandwicine compound of the formula I



(I)

wherein R is a carbon-attached organic residue containing 1 to 10 carbon atoms and having the formula II



(II)

wherein n is 0 or 1; m is 0 or 1; x is hydrogen, hydroxy, straight or branched alkyl which is unsubstituted or is substituted by hydroxy, alkoxy, halogen or dialkylamino, phenyl which is unsubstituted or is substituted by alkyl, alkoxy or halogen, dialkylamino, pyrrolidino, piperidino or morpholino; and y is hydrogen, hydroxy or methyl or x and y together form a bond with the proviso that when y is hydroxy n is 1 and that when x and y together form a bond n and m each are 1 and $A^{\ominus}$ is an anion of a pharmacologically acceptable organic or inorganic acid.

7. A pharmaceutical composition comprising a cardiac rhythm regulative effective amount of a compound as defined in claim **1** and an inert pharmaceutical carrier.

8. A method of treating heart rhythm disorders in larger mammals which comprises administering to a larger mammal an effective amount of a compound as defined in claim **1**.

4,552,878

BENZO- AND THIENO-TRIAZINE-1,2,3 ONES-4

Gérard Ferrand, Lyons; Hervé Dumas, Villefontaine; Michel Bayssat, Charbonnieres, and Jean-Claude Depin, Lyons, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Paris, France

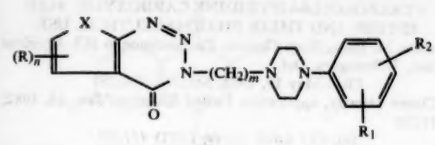
Filed Sep. 19, 1983, Ser. No. 534,173

Claims priority, application France, Sep. 22, 1982, 82 15934

Int. Cl.[4] **C07D** *253/08, 403/06;* **A61K** *31/53*

U.S. Cl. 514—243 **6 Claims**

4. A composition comprising as active principle an amount effective for anti-depressant activity of a [(phenyl-4 piperazino-1)-3 alkyl]-3-3H-benzo- or thieno-triazine-1, 2, 3 one-4 having the formula



in which m equals 2, 3 or 4; X is the vinylene group —CH=CH— or a sulfur atom; R_1 and R_2 can be alike or different and are hydrogen, a halogen, a lower alkyl radical, a lower alkoxy radical or a trifluoromethyl radical; when X equals —CH=CH—, n is 0, 1 or 2 and R is hydrogen, a halogen, a lower alkyl radical, a lower alkoxyl radical or the nitro group radical; when X is a sulfur atom R is hydrogen or constitutes a $—(CH)_2$ 4 between the two open positions of the thiophenic ring; or a salt of a pharmaceutically acceptable inorganic or organic acid thereof; together with a pharmaceutically acceptable carrier.

4,552,879

BENZOHETEROCYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITION THEREOF

Hiroshi Ishikawa; Testuyuki Uno; Masanobu Kano, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

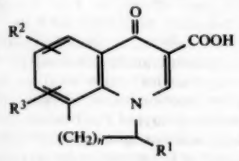
Division of Ser. No. 320,027, Nov. 10, 1981, Pat. No. 4,399,134. This application May 25, 1983, Ser. No. 497,914

Claims priority, application Japan, Nov. 10, 1980, 55-158652; Apr. 24, 1981, 56-63170

Int. Cl.[4] A61K *31/495;* **C07D** *487/06*

U.S. Cl. 514—253 **16 Claims**

16. An antibacterial composition comprising an antibacterially effective amount of a benzoheterocyclic compound of the formula (I)



(I)

wherein R^1 represents a hydrogen atom or a lower alkyl group; R^2 represents a hydrogen atom or a halogen atom; R^3 represents a 1-piperazinyl group substituted with an oxo group or a lower haloalkyl group, and n is an integer of 1 or 2; with the proviso that when n is 2, R^3 should not be a 1-piperazinyl group substituted with a lower haloalkyl group; or its pharmaceutically acceptable salt, as an active ingredient and a pharmaceutically, acceptable carrier.

4,552,880

AROYLIMIDAZOLONES

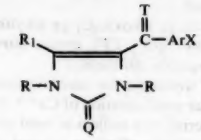
Richard C. Dage, and Richard A. Schnettler, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 466,409, Feb. 15, 1983, abandoned. This application Dec. 21, 1983, Ser. No. 562,758

Int. Cl.[4] C07D *233/30, 403/30, 211/70, 401/00*

U.S. Cl. 514—277 **13 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof wherein Q and T are each oxygen or a divalent sulfur atom, R is hydrogen, lower alkanoyl, or benzoyl, R_1 is hydrogen or lower alkyl, Ar is phenyl, 2-, 3- or 4- pyridyl, 2- or 3- pyrryl, 2- or 3- thienyl, and 2- or 3- furanyl and X is a substituent of the group cyano, carboxy, carboxamido, alkoxycarbonyl, amidino and imidazol-2-yl.

13. A method of treating cardiac failure in patient in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of claim 1.

4,552,881

SUBSTITUTED AND BRIDGED PYRIDINES USEFUL AS CALCIUM CHANNEL BLOCKER

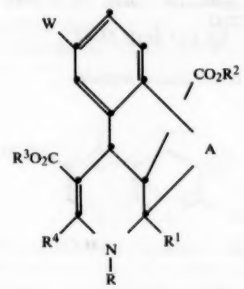
David A. Claremon, Audubon, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 1, 1984, Ser. No. 636,780

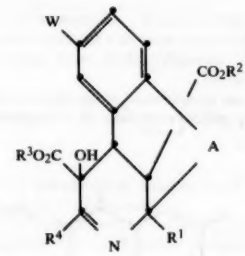
Int. Cl.[4] C07D *221/22*

U.S. Cl. 514—295 **10 Claims**

1. A compound represented by the following general structural formulae (I) and (II):



(I)



(II)

wherein:

A is $>CHCH{=}CH_2$ or $>CHCH_2CH_3$;

R is hydrogen, C_{1-C8} alkyl or benzyl;

R^1 and R^4 independently are C_{1-C8} alkyl, C_{2-C8} alkenyl, C_{3-C8} cycloalkyl, C_{1-C8} hydroxyalkyl;

R^2 and R^3 independently are C_{1-C8} alkyl, C_{2-C8} alkenyl, C_{3-C8} cycloalkyl, C_{1-C8} hydroxyalkyl, C_{1-C8} dihydroxyalkyl, C_{2-C8} alkoxyalkyl, C_{3-C8} alkoxy(alkoxyalkyl), C_{1-C8} aminoalkyl wherein the amino group is NR^5R^6 in which R^5 and R^6 independently are hydrogen, C_{1-C8}

alkyl, C_{7-C14} phenylalkyl together with R^4 is methylene or ethylene; and

W is hydrogen, C_{1-C8} alkoxy, C_{1-C8} alkylthio, C_{1-C8} alkyl S(O), C_{1-C8} alkyl $S(O)_2$, CF_3, cyano, nitro, or a pharmaceutically acceptable salt thereof.

9. A method of treatment for cardiovascular disorders in which a high cellular concentration of Ca^{++} is a factor which comprises administering to a subject in need of such treatment a nontoxic therapeutically effective amount of a compound according to claim 1.

4,552,882

7-(1-PYRROLYL) DERIVATIVES OF 1-ETHYL-1,4-DIHYDRO-4-OXOQUINOLINE-3-CARBOXYLIC ACIDS AND 1-ETHYL-1,4-DIHYDRO-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS AND THEIR USE AS ANTIMICROBIAL AGENTS

José Esteve-Soler, Barcelona, Spain, assignor to Provesan, SA, Geneva, Switzerland

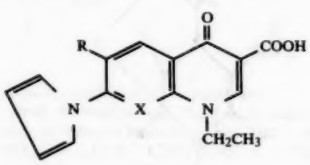
Filed Jun. 20, 1984, Ser. No. 622,647

Claims priority, application France, Jul. 6, 1983, 83 11250; Feb. 13, 1984, 84 02145

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—300 **8 Claims**

1. A compound of the general formula:



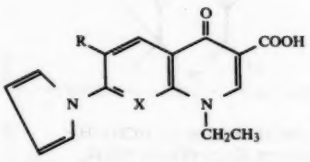
in which

X represents a carbon atom or a nitrogen atom, and

R represents a hydrogen atom or a fluorine atom;

and physiologically acceptable alkali metal salts or alkaline earth metal salts thereof.

7. An antimicrobial composition comprising an antimicrobially therapeutically effective amount of a compound of formula:



in which

X represents a carbon atom or a nitrogen atom, and

R represents a hydrogen atom or a fluorine atom, or a physiologically acceptable alkali metal salt or alkaline earth metal salt thereof, and a pharmaceutically acceptable vehicle therefor.

4,552,883

PYRAZOLO[3,4-b]PYRIDINE CARBOXYLIC ACID ESTERS AND THEIR PHARMACEUTICAL USE

Thomas M. Bare, West Chester, Pa., assignor to ICI Americas Inc., Wilmington, Del.

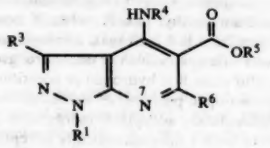
Filed May 19, 1983, Ser. No. 496,259

Claims priority, application United Kingdom, Jun. 15, 1982, 8217258

Int. Cl.⁴ A61K *31/44*; C07D *471/04*

U.S. Cl. 514—303 **9 Claims**

1. A pyrazolo[3,4-b]pyridine of the formula:



wherein

R^1 is a straight or branched chain alkyl of 1 to 10 carbons, cycloalkyl of 3 to 8 carbons, cycloalkylalkyl of 4 to 12 carbons, alkenyl or alkynyl of 3 to 10 carbons, arylalkyl of 7 to 12 carbons; straight or branched chain alkyl of 1 to 10 carbons into the backbone of which is inserted an oxygen, sulfur, sulfinyl or sulfonyl divalent moiety, or straight or branched chain alkyl of 1 to 10 carbons substituted by a hydroxy, amino, 1 to 6 carbon alkylamino, 2 to 12 carbon dialkylamino, cyano, oxo, ketal, hemiketal, acetal or hemiacetal group, wherein the alkyl group or groups of the ketal, hemiketal, acetal or hemiacetal each are of 1 to 6 carbons, or by one or more of chloro, bromo, iodo or fluoro groups;

R^3 is hydrogen or straight or branched chain alkyl of 1 to 6 carbons;

R^4 is hydrogen, straight or branched chain alkyl of 1 to 10 carbons or straight or branched chain alkyl of 1 to 10 carbons substituted by a hydroxy or oxo group;

R^5 is straight or branched chain alkenyl of 3 to 7 carbons, straight or branched chain alkynyl of 3 to 7 carbons, hydroxy(straight or branched chain)alkyl of 1 to 7 carbons, cycloalkyl of 3 to 7 carbons, cycloalkylalkyl of 4 to 10 carbons, alkoxy(straight or branched chain)alkyl of 2 to 10 carbons, straight or branched chain alkyl of 2 to 7 carbons substituted by one or more halogen atoms, straight or branched chain alkenyl of 3 to 7 carbons substituted by one or more halogen atoms, aryl(straight or branched chain)alkyl of 6 to 10 carbons in the aryl portion and 1 to 7 carbons in the alkyl portion; aryl-(straight or branched chain)alkenyl of 6 to 10 carbons in the aryl portion and 3 to 7 carbons in the alkenyl portion, or phenyl; and

R^6 is hydrogen or straight or branched chain alkyl of 1 to 8 carbons, or an N-oxide at the 7-position of the pyrazolo [3,4,-b]-pyridine ring system, or a pharmaceutically acceptable acid-addition salt thereof.

4,552,884

METHOD OF TREATING HEART DISEASE

Malcolm F. Sim, Woodborough, and David B. Yates, Farnsfield, both of England, assignors to The Boots Company PLC, Nottingham, England

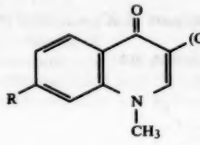
Filed Jan. 7, 1985, Ser. No. 689,180

Claims priority, application United Kingdom, Jan. 13, 1984, 8400905; Jan. 13, 1984, 8400906

Int. Cl.⁴ A61K *31/47*

U.S. Cl. 514—312 **9 Claims**

1. A method for the treatment of heart failure in a mammal which comprises the administration to a mammal with heart failure of a therapeutically effective amount of a quinolone of the formula I,



I

wherein m is 0 or 1, n is 0, 1 or 2; and R is hydrogen, halo, methyl or trifluoromethyl.

4,552,885

STABILIZED FUNGICIDE COMPOSITIONS

Peter D. Gabriele, Danbury, Conn., and Jerry E. Rademan, Pearl River, N.Y., assignors to Ciba Geigy Corporation, Ardsley, N.Y.

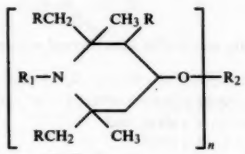
Continuation-in-part of Ser. No. 334,197, Dec. 24, 1981, abandoned. This application Dec. 22, 1982, Ser. No. 451,185

Int. Cl.⁴ A61K *31/445;* **A01N** *43/40*

U.S. Cl. 514—316 **26 Claims**

1. A composition of matter comprising a fungicide subject to light-induced deterioration stabilized with an effective stabilizing amount of a 2,2,6,6-tetraalkylpiperidine compound.

6. The composition of claim 1, wherein said 2,2,6,6-tetraalkylpiperidine compound corresponds to the formula (II)



(II)

in which n is a number from 1–4 inclusive; R is hydrogen or methyl; R_1 is hydrogen, oxyl, C_1–C_{18} alkyl, C_3–C_8 alkenyl, C_1–C_8 alkynyl, C_7–C_{12} aralkyl, C_1–C_8 alkanoyl, C_3–C_5 alkenoyl, glycidyl or a group —CH_2—CH(OH)—Z wherein Z is hydrogen, methyl or phenyl, and R_2 when n is 1 is hydrogen, C_1–C_{18} alkyl optionally interrupted by one or more oxygen atoms, cyanoethyl, benzyl, glycidyl, a monovalent radical of an aliphatic, cycloaliphatic, araliphatic or aromatic carboxylic acid, or of carbamic acid or of a phosphorus-containing acid, or a monovalent silyl radical; R_2 when n is 2 is C_2–C_{12} alkylene, C_4–C_{12} alkenylene, xylylene, a bivalent radical of an aliphatic, cycloaliphatic, araliphatic or aromatic dicarboxylic acid, of dicarbamic acid or of a phosphorus-containing acid, or a bivalent silyl radical; R_2 when n is 3 is a trivalent radical of an aliphatic, cycloaliphatic or aromatic tricarboxylic acid, of an aromatic tricarbamic acid or of a phosphorus-containing acid, or a trivalent silyl radical; and R_2 when n is 4 is a tetravalent radical of an aliphatic, cycloaliphatic or aromatic tetracarboxylic acid.

4,552,886

FUNGICIDAL PYRIDYLMETHYL-AMINES

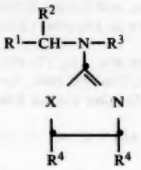
Eriks V. Krumkalns, Indianapolis, and David L. Smiley, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 385,602, Jun. 7, 1982, abandoned. This application Mar. 7, 1983, Ser. No. 472,439

Int. Cl.⁴ C07D *417/12, 413/12;* **A61K** *31/44*

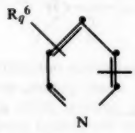
U.S. Cl. 514—342 **54 Claims**

1. A compound of the formula

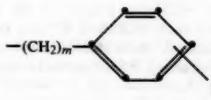


wherein

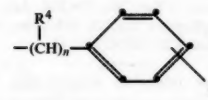
R^1 is



R^2 is hydrogen, C_1–C_4 alkyl or



R^3 is C_2–C_{10} alkenyl, C_1–C_{10} alkoxy, C_1–C_{10} haloalkyl, C_1–C_{10} haloalkoxy, C_3–C_8 cycloalkyl, 1,3-benzodioxolyl or



each R^4 is independently hydrogen or C_1–C_4 alkyl;

each R^5 is independently C_1–C_6 alkyl, C_1–C_6 alkoxy, C_3–C_8 cycloalkyl, C_1–C_6 alkylthio, halogen, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy, nitro, cyano or

each R^6 is independently halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;

each R^7 is independently C_1–C_6 alkyl, C_1–C_6 alkoxy, C_3–C_8 cycloalkyl, C_1–C_6 alkylthio, halogen, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy, nitro or cyano;

X is O or S;

Z is O, S, —$(CH_2)_n$— or a direct link;

m is 0 or 1;

each n is independently 0, 1, 2 or 3;

each q is independently 0, 1 or 2;

and the agronomically-acceptable salts thereof.

29. A method for controlling the growth of fungal diseases which comprises applying to the locus of the plant for which control is desired a disease inhibiting and non-herbicidal amount of a compound of claim 1.

4,552,887

BIOLOGICALLY ACTIVE AMIDES

Ian T. Kay, Wokingham, and Robert A. Noon, Maidenhead, both of England, assignors to Imperial Chemical Industries PLC, London, England

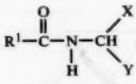
Division of Ser. No. 408,894, Aug. 17, 1982, Pat. No. 4,415,959. This application Feb. 25, 1985, Ser. No. 705,182

Claims priority, application United Kingdom, Sep. 30, 1981, 8129521

Int. Cl.[4] A01N *43/40, 43/56, 43/64*

U.S. Cl. 514—381 **3 Claims**

1. A process for combating fungi which comprises applying to the fungi, or to the locus thereof, a fungicidally effective amount of a compound of the formula (I):



(I)

wherein R^1 is (a) a phenyl group optionally substituted by one or more halogen atoms, cyano groups, alkoxy groups, methylene- or ethylene-dioxy groups, alkyl groups, or haloalkyl groups; or (b) a furyl or thiophenyl group optionally substituted by one or more alkyl groups, haloalkyl groups or halogen atoms; X is a pyrazolyl, tetrazolyl or 1,2,4 triazolyl radical linked by a ring nitrogen atom to the carbon atom bearing Y, and optionally substituted by one or more alkyl groups, and Y is a CN group, a $—CSNH_2$ group; or an amide group $—CONR^5R^6$ wherein each of R^5 and R^6 may be a hydrogen atom or an alkyl radical, each alkoxy, alkyl and haloalkyl referred to above containing from 1 to 6 carbons.

4,552,888

ASCORBIC ACID ETHERS IN ANGIOGENE

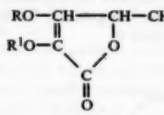
Gary A. Koppel; Russell L. Barton; Jesse R. Bewley, all of Indianapolis; Stephen L. Briggs, Clayton, and Joseph W. Parton, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 339,344, Jan. 15, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 536,474

Int. Cl.[4] A61K *31/375*

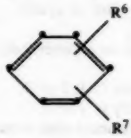
U.S. Cl. 514—474 **20 Claims**

1. The method of inhibiting angiogenesis in collagen-induced arthritis which comprises administering to a mammal in need of treatment an angiogenesis inhibiting dose of a compound of the formula



I

wherein R and R^1 are individually H or CH_2R^4, except that at least one of R and R_1 must be other than H, wherein R^4 is $(C_1–C_{21})$alkyl-R^5, $(C_2–C_{12})$alkenyl, $(C_2–C_{12})$alkynyl, $(C_3–C_8$-)cycloalkyl, $(C_3–C_8)$cycloalkenyl, $(C_7–C_{12})$bicycloalkyl or $(CH_2)_m$ Z, wherein R^5 is CN, OH, H, O—$(C_1–C_5)$alkyl, O—$(C_2–C_4)$haloalkyl, phthalimido, $COOR^8$, OZ or $N(CH_3)_2$; m is 0, 1 or 2 and Z is



wherein R^6 and R^7 are individually halo, CF_3, H, $(C_1–C_3)$alkyl, O-$(C_1–C_3)$alkyl or NO_2 and R^8 is H or $(C_1–C_3)$alkyl, except that when R' is $(C_1–C_{21})$alkyl-R^5 and R^5 is O-$(C_1–C_5)$alkyl, O-$(C_2–C_4)$haloalkyl or OZ, the total number of carbon atoms in R^4 is less than 22;

R^2 and R^3, when taken singly are H, $(C_1–C_{12})$alkyl or CH_2-phenyl;

R^2 and R^3, when taken together, are

wherein R^9 is $(C_1–C_{10})$alkyl, halo-substituted $(C_1–C_{10})$alkyl, Z, or $(C_1–C_{10})$alkyl-Z and R^{10} is R^9 or H.

4,552,889

3-MERCAPTOMETHYL-2-OXO-1-PYRROLIDINE ACETIC ACIDS AND USE FOR HYPERTENSION

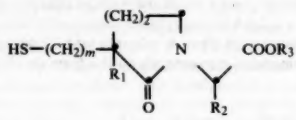
William L. Scott, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 9, 1983, Ser. No. 502,861

Int. Cl.[4] A61K *31/40;* **C07D** *207/12*

U.S. Cl. 514—424 **18 Claims**

1. A compound of the formula I



I

and pharmaceutically acceptable salts thereof wherein

m is 0 or 1;

n is 1;

R_1 is $C_1–C_3$ alkyl or benzyl;

R_2 is hydrogen or $C_1–C_3$ alkyl; and

R_3 is hydrogen or $C_1–C_3$ alkyl.

10. A method of treating hypertension comprising administering to a mammal suffering from hypertension and in need of treatment an effective amount of a compound according to claim 1.

4,552,890

PLANT PHYTOPATHOGENIC FUNGICIDAL AGENTS BASED ON MALEIMIDE

Gerhard Marzolph, Cologne; Heinz U. Blank, Odenthal; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

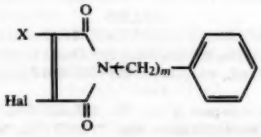
Filed Feb. 8, 1984, Ser. No. 578,232

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306844

Int. Cl.[4] A61K *31/40;* **C07D** *207/452*

U.S. Cl. 514—425 **12 Claims**

1. A method of combatting plant pathogenic fungi which comprises applying to such fungi, to a plant, plant part, to seed or to soil a fungicidally effective amount of at least one maleic acid N-aralkyl-imide of the formula



n which

X is hydrogen or halogen,

Hal is halogen, and
m is 2, 3 or 4.

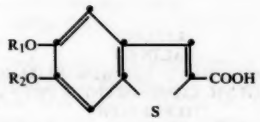
8. A halomaleic acid N-aralkyl-imide selected from the group consisting of
chloromaleic acid N-(2-phenethyl)-imide,
2,3-dibromomaleic acid N-(2-phenethyl)-imide and
2,3-dichloromaleic acid N-(4-phenylbutyl)-imide.

4,552,891
BENZOTHIOPHENE DERIVATIVES

Peter P. K. Ho, Carmel, and Quentin F. Soper, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 13, 1983, Ser. No. 531,802
Int. Cl.[4] A61K *31/38*
U.S. Cl. 514—443 **10 Claims**

1. A method of treating a mammal suffering from or susceptible to an asthmatic attack, which comprises administering to said mammal an effective amount of a compound of the formula



I

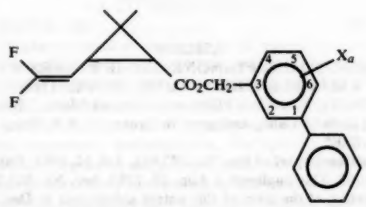
wherein each of R_1 and R_2 is independently hydrogen or C_1–C_7 alkyl, or a pharmaceutically acceptable salt thereof.

4,552,892
ACARICIDAL DIFLUOROETHENYLCYCLOPROPANECARBOXYLATES

Ernest L. Plummer, Yardley; John F. Engel, Washington Crossing, both of Pa., and Richard B. Phillips, Cranbury, N.J., assignors to FMC Corporation, Philadelphia, Pa.

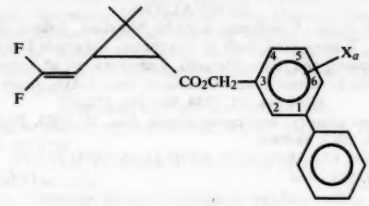
Continuation of Ser. No. 474,366, Mar. 11, 1983, abandoned. This application Apr. 25, 1985, Ser. No. 726,305
Int. Cl.[4] C07C *69/743;* **A01N** *53/00*
U.S. Cl. 514—531 **6 Claims**

1. A compound of the formula



in which X_a is 2-fluoro, 2,4-difluoro, 2,4,6-trifluoro, 2,4,5,6-tetrafluoro, 2-methyl, or 2,4-dimethyl.

3. An acaricidal composition comprising an acaricidally effective amount of a compound of the formula



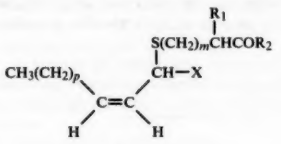
in which X_a is 2-fluoro, 2,4-difluoro, 2,4,6-trifluoro, 2,4,5,6-tetrafluoro, 2-methyl, or 2,4-dimethyl in admixture with an agriculturally acceptable carrier.

4,552,893
LEUKOTRIENE ANTAGONISTS

John G. Gleason, Delran; Ralph F. Hall, Robbinsville, both of N.J., and Thomas W. Ku, Dresher, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Mar. 7, 1983, Ser. No. 472,774
Int. Cl.[4] A61K *31/20;* **C07C** *103/187, 57/12, 57/13*
U.S. Cl. 514—560 **15 Claims**

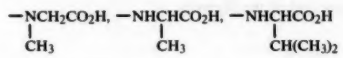
1. A compound represented by the structural formula (I)



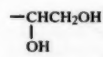
(I)

wherein m is 0, 1 or 2; p is 9, 10, 11, 12 or 13; R_1 is hydrogen, amino or

R_2 is hydroxyl, amino, $-NHCH_2CO_2H$,



or $-NHCH_2CONH_2$; and X is $-C0_2H$, $-CH_2OH$ or



with the proviso that when m is 0, R_1 is hydrogen, or a pharmaceutically acceptable salt thereof.

11. A pharmaceutical composition for inhibiting the effects of leukotriene in subjects in need of such inhibition comprising a pharmaceutical carrier or diluent and a nontoxic amount sufficient to produce said inhibition of a compound of claim 1.

4,552,894

2-FLUOROETHOXY-SUBSTITUTED BENZENE DERIVATIVES

Tsuneo Inoue, Yokohama; Kiyoshi Nakatani, Tokyo; Kengo Oda; Tutomu Ishii, both of Yokohama; Takatoshi Udagawa, Chigasaki, and Shiro Shiraishi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

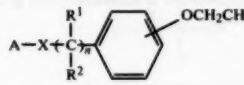
Filed Jan. 24, 1984, Ser. No. 573,472

Claims priority, application Japan, Jan. 25, 1983, 58-9396; Jan. 26, 1983, 58-9969

Int. Cl.[4] A01N *43/16;* **C07C** *51/36;* **C07D** *317/44*

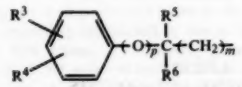
U.S. Cl. 514—464 **11 Claims**

1. A 2-fluoroethoxy-substituted benzene derivative represented by the general formula



(I)

wherein X represents an oxygen or sulfur atom, R^1 and R^2 represent a hydrogen atom or a lower alkyl group, n represents 0 or 1, and A represents a group of the general formula



(II)

in which R^3 and R^4 represent a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a lower alkylthio group, a lower haloalkyl group, a lower haloalkylthio group or a methylenedioxy group, R^5 and R^6 represent a hydrogen atom or a lower alkyl group, and p and m represent 0 or 1.

7. A method of combatting insect pests and/or acarids, which comprises contacting the insect pests or acarids with a pesticidally effective amount of a compound according to claim 1.

4,552,895

FURO[3,2-B]FURAN-2-(3H)-ONES

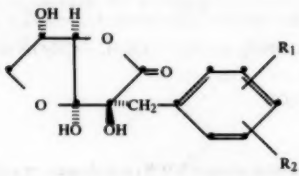
Gary A. Koppel; Russell L. Barton, both of Indianapolis, and Stephen L. Briggs, Clayton, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 14, 1983, Ser. No. 475,272

Int. Cl.[4] C07D *307/93;* **A61K** *31/365*

U.S. Cl. 514—470 **20 Claims**

1. A compound of the formula



I

wherein each R_1 and R_2 is independently hydrogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 alkyl, halo, trifluoromethyl, nitro, or amino, with the limitation that when one of R_1 and R_2 is hydrogen, the other of R_1 and R_2 may not be hydrogen or hydroxy.

4,552,896

INSECT REPELLENT: 1-(3-PHENOXY)-PROPYL-2,3-DIBROMOPROPIONATE

Nathan S. Bunker, Pleasant Hill, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Jun. 6, 1984, Ser. No. 618,003

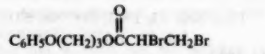
Int. Cl.[4] A01N *37/12;* **C07C** *69/635*

U.S. Cl. 514—550 **5 Claims**

1. A compound having the formula

wherein C_6H_5 is phenyl.

2. An insect repelling composition containing an amount of a compound having the formula



wherein C_6H_5 is phenyl, effective to repel insects from lighting or feeding and an inert diluent or carrier suitable for insect repellent compositions.

4,552,897

SALTS OF 1-(AMINODIHALOPHENYL)-2-AMINOETHANOLS AND ANTILIPOGENIC COMPOSITIONS PREPARED THEREFROM

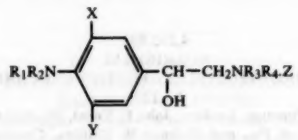
Goro Asato, Titusville, and Lawrence J. Ross, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 1, 1983, Ser. No. 462,746

Int. Cl.[4] C11C *3/00;* **C07C** *91/04*

U.S. Cl. 514—554 **6 Claims**

1. A soluble salt of structural formula



wherein R_1 is hydrogen or C_1–C_{14} alkyl; R_2 is hydrogen or methyl, provided that when R_1 is C_2–C_{14} alkyl then R_2 is hydrogen; R_3 and R_4 are hydrogen or C_1–C_6 alkyl; X and Y are bromine, chlorine, fluorine or iodine; and Z is oleic acid, abietic acid or mixtures thereof.

4,552,898

[3.2.0]BICYCLOHEPTANONE OXIME ETHERS WITH VALUABLE THERAPEUTIC PROPERTIES

Tsung-Tee Li, Los Altos Hills, and Michael Marx, Mountain View, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

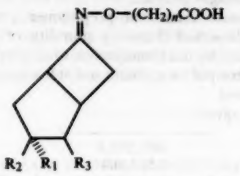
Continuation-in-part of Ser. No. 397,951, Jul. 14, 1982, Pat. No. 4,423,068. This application Aug. 19, 1983, Ser. No. 524,711

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

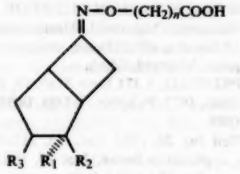
Int. Cl.[4] A61K *31/19, 31/215;* **C07C** *131/02*

U.S. Cl. 514—561 **49 Claims**

1. A compound or its optical isomers chosen from those represented by the formulas



(1)



(2)

and the pharmaceutically acceptable non-toxic salts and esters thereof, wherein:

n is an integer from one to four;

R_1 is hydroxy;

R_2 is hydrogen; or

R_1 and R_2 together are an oxo group; and

R_3 is —A—CHOH—R_4 wherein

A is $—CH_2—CH_2—$; trans—CH=CH—; or —C≡C—; and

R_4 is linear or branched alkyl of one to twelve carbons, preferably 1–10 carbons, most preferably 3–8 carbons, cycloalkyl of three to eight carbons; phenyl optionally substituted with one or two identical substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, trifluoromethyl and halo; or phenyl-loweralkyl optionally substituted with one or two identical substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, and halo.

48. A pharmaceutical composition for preventing or treating cardiovascular disorders in mammals which comprises an effective dosage of a compound of claim 1 or a pharmaceutically acceptable non-toxic salt and ester thereof in admixture with at least one pharmaceutically acceptable excipient.

4,552,899

COUGH/COLD MIXTURES COMPRISING NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Filed Apr. 9, 1984, Ser. No. 598,502

Int. Cl.[4] A61K *31/19, 31/135*

U.S. Cl. 514—568 **20 Claims**

1. A pharmaceutical composition of matter for use in the treatment of cough, cold, cold-like and/or flu symptoms in a mammalian organism, said composition comprising a sympathomimetically, analgesically and anti-inflammatorily effective amount of (i) at least one of the propionic acid NSAIDs, ibuprofen, naproxen, benozaprofen, flurbiprofen, fenoprofen, fenbufen, ketoprofen, indoprofen, pirprofen, carprofen, oxaprozin, pranoprofen, miroprofen, trioxaprofen, suprofen, alminoprofen, tiaprofenic acid, fluprofen, bucloxic acid, or pharmaceutically acceptable salt thereof, in combinatory immixture with (ii) at least one of the sympathomimetic amines, pseudoephedrine, phenylpropanolamine, phenylephrine, or pharmaceutically acceptable salt thereof.

4,552,900

3-(PYRIMIDIN-5-YL-OXYPHENYL)-1-BENZOYL-(THIO)-UREA COMPOUNDS USEFUL AS PESTICIDES

Wilhelm Sirrenberg, Sprockhoevel; Fritz Maurer, Wuppertal; Erich Klauke, Odenthal; Benedikt Becker, Mettmann, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

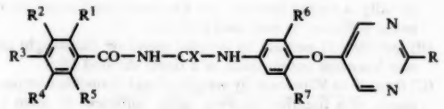
Filed Mar. 15, 1984, Ser. No. 589,986

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311703

Int. Cl.[4] A61K *31/505;* **C07D** *239/02*

U.S. Cl. 514—269 **12 Claims**

1. A 3-(pyrimidin-5-yl-oxy-phenyl)-1-benzoyl-(thio)-urea of the formula



in which

R represents hydrogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, halogeno-C_1–C_6-alkyl, phenyl or a phenyl radical which is substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, halogeno-C_1–C_4-alkyl, halogeno-C_1–C_4-alkoxy and/or halogeno-C_1–C_4-alkylthio,

R^1 represents hydrogen, nitro, halogen, C_1–C_4-alkyl or C_1–C_4-alkylthio,

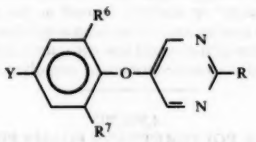
R^2, R^3, R^4 and R^5 are identical or different and represent hydrogen or halogen, and

R^6 and R^7 are identical or different and represent hydrogen, halogen or C_1–C_4-alkyl, and

X represents oxygen or sulphur.

10. A method of combatting arthropods which comprises administering to such arthropods or to an arthropod habitat an arthropodicidally effective amount of a compound according to claim 1.

12. A compound of the formula



in which

R represents hydrogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, halogeno-C_1–C_6-alkyl, phenyl or a phenyl radical which is substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, halogeno-C_1–C_4-alkyl, halogeno-C_1–C_4-alkoxy and/or halogeno-C_1–C_4-alkylthio,

R^6 and R^7 are identical or different and represent hydrogen, halogen or C_1–C_4-alkyl, and

Y represents NO_2, NH_2 or NCX, wherein X denotes oxygen or sulphur.

4,552,901

NONSLUMPING, FOAMABLE POLYORGANOSILOXANE COMPOSITIONS CONTAINING ORGANOSILOXANE GRAFT COPOLYMERS

Therese M. Bauman, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Substitute for Ser. No. 664,913, Oct. 26, 1984,. This application Apr. 8, 1985, Ser. No. 720,768

Int. Cl.[4] C08J 9/14

U.S. Cl. 521—122 11 Claims

1. A foamable composition which is stable when confined under superatmospheric pressure and when released into an area under atmospheric pressure forms a nonslumping, moisture-curable foam, said composition consisting essentially of the product obtained by mixing under substantially anhydrous conditions

(A) a moisture-curable RTV elastomeric organosiloxane composition comprising the product obtained by mixing in the absence of atmospheric moisture at least one polydiorganosiloxane curable in the presence of a moisture reactive crosslinker, a moisture reactive crosslinker and, optionally, a curing catalyst, the amount of said crosslinker being sufficient to cure said polymer;

(B) less than 12 percent by weight, based on the weight of said foamable composition of a finely divided filler;

(C) from 10 to 50 percent by weight of said foamable composition, of a liquified blowing agent sufficient to form a foam following release of said composition into an area under atmospheric pressure; and

(D) from 5 to 80 percent, based on the combined weight of all diorganosiloxane polymers present in said composition, of an organosiloxane graft copolymer obtained by the peroxide catalyst polymerization of at least one ethylenically unsaturated organic monomer in the presence of a liquid, hydroxyl endblocked polydiorganosiloxane.

4,552,902

PROCESS FOR PREPARING STABLE SOLUTIONS OF TRIMERIZED ISOCYANATES IN MONOMERIC POLYISOCYANATES

John L. Nafziger, Lake Jackson; Mark A. Snyder, Angleton, and Larry W. Mobley, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 685,269

Int. Cl.[4] C08G 18/14, 18/18

U.S. Cl. 521—129 11 Claims

1. A process for preparing a trimerized isocyanate having improved solubility in a polyisocyanate, which process comprises the steps of (a) forming a first isocyanate terminated prepolymer by reacting a first low equivalent weight polyahl and a stoichiometric excess of a first polyisocyanate, (b) forming a cotrimer by reacting said first isocyanate-terminated prepolymer with a diphenylmethane diisocyanate or polymeric derivative thereof or mixtures thereof in the presence of a trimerization catalyst and (c) reacting a stoichiometric excess of said cotrimer with a second low equivalent weight polyol to form a second isocyanate-terminated prepolymer.

4,552,903

FLEXIBLE POLYURETHANE FOAMS PREPARED FROM COTRIMERS OF ALKYLENE-BRIDGED POLYPHENYLENE POLYISOCYANATES

John L. Nafziger, Lake Jackson; Mark A. Snyder, Angleton, and Larry W. Mobley, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 685,290

Int. Cl.[4] C08G 18/14

U.S. Cl. 521—137 10 Claims

1. A flexible polyurethane foam comprising the reaction product of a reaction mixture comprising:

(a) a dispersion of polymer particles in a continuous polyahl phase which continuous phase comprises a relatively high equivalent weight polyahl,

(b) an isocyanate-terminated prepolymer containing dissolved or dispersed therein a plurality of isocyanurate groups formed by the trimerization of an alkylene-bridged polyphenylene polyisocyanate and at least one other polyisocyanate and

(c) a blowing agent.

4,552,904

RIGID THERMOPLASTIC RESIN FOAM AND PROCESS FOR PREPARATION THEREOF

Takao Kadota, Kanuma; Masayuki Hashimoto, and Itsuo Hamada, both of Suzuka, all of Japan, assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/JP83/00232, § 371 Date Mar. 19, 1985, § 102(e) Date Mar. 19, 1985, PCT Pub. No. WO85/00553, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 20, 1983, Ser. No. 717,268

Claims priority, application Japan, Jan. 25, 1982, 57-8838

Int. Cl.[4] C08J 9/36

U.S. Cl. 521—145 1 Claim

1. A foam obtained by foaming a rigid thermoplastic resin, said foam having a density (D) of $3\ Kg/m^3 \leqq D \leqq 17\ Kg/m^3$, a multi:cellular structure including many wrinkles having one end in the boundary portion where at least 3 cells are adjacent to one another and extending toward the central portion of the cell wall, an average cell diameter (A) of $A \leqq 2.0$ mm, a closed cell ratio (B) of $B \geqq 50\%$, a kinetic spring constant (K) of $K \leqq 40 \times 10^6 N/m^3$, and a minimum value (C), among 60% compression set values determined with respect to three directions rectangular to one another, of $C \leqq 25\%$.

4,552,905

COPOLYMER, A PROCESS FOR ITS PREPARATION AND ITS USE AS A SORBENT

Karl-Heinz Keil, Hanau-Mittelbuchen; Ulrich Greiner, Schöneck; Fritz Engelhardt, Frankfurt am Main; Klaus Kühlein, Kelkheim; Reinhold Keller, Bad Soden, and Merten Schlingmann, Königstein, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,707

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324834

Int. Cl.[4] C08J 9/00

U.S. Cl. 521—149 11 Claims

1. Crosslinked bead-like porous copolymer containing 75 to 99.9% by weight of recurring units of a pyridyl, quinolyl, isoquinolyl or pyrazinyl compound containing a polymerisable olefinic group or of several such compounds, 0.1 to 25% by weight of units of an n-valent polyunsaturated crosslinking agent or of several n-valent polyunsaturated crosslinking agents and 0 to 25% by weight of units of a polymerisable organisilicon and/or organoboron compound or of several such compounds and, based on 100% by weight of the sum of the above-mentioned units, 5 to 350% by weight of units of an N-vinyl-amide of the general formula I $CH_2{=}CH{-}N(R^1){-}C(R^2){=}O$, wherein R^1 denotes hydrogen, methyl or ethyl

and R^2 denotes hydrogen or (C_1–C_3)-alkyl, or of several such N-vinyl-amides, and 0 to 40% by weight or units of another polymerisable compound or of several such com-pounds, n being a number equal to or greater than 2 and it being possible for the pyridyl, quinolyl, isoquinolyl or pyrazinyl compound also additionally to have one other or several other substituents.

4,552,906

POLYMERIZABLE DENTAL COMPOSITIONS AND MOLDED DENTAL ARTICLES PRODUCED THEREFROM

Wolfgang Podszûn, Cologne; Fritjof Bley, Achberg, and Michael Walkowiak, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 605,012

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316851

Int. Cl.⁴ A61K *6/08*

U.S. Cl. 523—115 **9 Claims**

1. In a polymerizable dental composition comprising a polyfunctional (meth)acrylic ester as binder, and about 5 to 50% by weight of a microfine inorganic filler, the improvement which comprises about 0.5 to 25% by weight of a non-crosslinked polymer having a glass transition temperature ≦0° C. and a molecular weight M_w of about $10^3-5\times10^5$.

4,552,907

EPOXY RESIN COMPOSITION

Shigeyuki Sato, Toyota, and Mitsumasa Matsushita, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 27, 1984, Ser. No. 635,012

Claims priority, application Japan, Jul. 29, 1983, 58-139777; Aug. 11, 1983, 58-147127; Oct. 14, 1983, 58-193065; Oct. 25, 1983, 58-199729; Nov. 8, 1983, 58-209593; Nov. 24, 1983, 58-221230; Jun. 26, 1984, 59-131536; Jun. 26, 1984, 59-131537; Jun. 28, 1984, 59-133877

Int. Cl.⁴ C08G *59/02;* **C08K** *5/09*

U.S. Cl. 523—455 **53 Claims**

1. An epoxy resin composition having improved moisture resistance and rust preventing properties, comprising an epoxy resin, a hardener and at least one additive selected from the group consisting of lanolin, lanolin fatty acids and lanolin fatty acid metal salts, the additive present in an amount sufficient so that a portion of said additive does not react with the epoxy resin and exudes to the surface of the epoxy resin composition when the composition is used.

4,552,908

WATER-DILUTABLE AQUEOUS COATING COMPOSITIONS

Peter F. Nicks, Maidenhead, England, and Gillian A. Young, Toronto, Canada, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 17, 1984, Ser. No. 641,777

Claims priority, application United Kingdom, Aug. 30, 1983, 8323241

Int. Cl.⁴ C09D *5/40, 3/64, 5/02, 3/72*

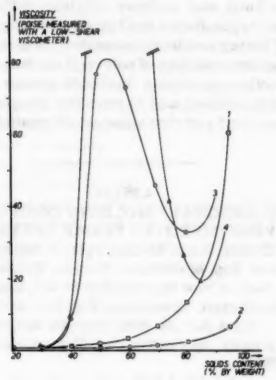
U.S. Cl. 523—504 **10 Claims**

1. A water-dilutable aqueous coating composition which comprises:

(A) X parts of a water-dispersible film-forming polymer of molecular weight in the range 2,000–30,000, the polymer comprising

(a) anionisable groups, at least partially neutralised with a base when required, selected from —COOH, —SO_3H and —PO_4H_2, or cationisable groups, at least partially neutralised with an acid when required, of structure —N R^1R^2, where R^1 and R^2 are H or C_{1-18} alkyl or substituted alkyl groups, the same or different, or R_1 and R_2 represent part of a cyclic structure, and

(b) non-ionisable water-soluble moieties selected from moieties of polyethylene glycol or its monoethers of molecular weight not greater than 1,000; and moieties of poly(-meth)acrylamide, of polyvinylpyrrolidone or of poly 2-ethyl oxazoline and its hydrolysates, all being of molecular weight not greater than 2,000;



(B) Y parts of an organic coupling solvent for the film-forming polymer which has a boiling point greater than that of water, where Y=X(Z/100), Z being in the range 0–150, and

(C) water,

which is characterised in that when a solution of X parts of the water-dispersible polymer in Y parts of the organic coupling solvent or, when Y=O, in water is progressively diluted with water, there is no increase in viscosity of the diluted aqueous solution as measured at 25° C. by a low shear viscometer.

4,552,909

THIXOTROPIC COMPOSITIONS COMPRISING LEATHER FIBERS AND METHOD FOR RENDERING POLYMERIC COMPOSITIONS THIXOTROPIC

Richard W. Czerwinski, Nashville; Graham W. Gregory; Richard H. Miller, both of Old Hickory, and Stanley A. Rafalowski, Jr., Nashville, all of Tenn., assignors to Genesco Inc., Tenn.

Filed Sep. 26, 1984, Ser. No. 654,592

Int. Cl.⁴ C08L *89/06*

U.S. Cl. 524—11 **51 Claims**

1. A thixotropic composition comprising:

(1) a liquid; and

(2) a thixotropic agent consisting essentially of leather fibers in an amount sufficient to render the liquid thixotropic.

4,552,910

AQUEOUS COMPOSITIONS CONTAINING AN ORGANOSILICON COMPOUND

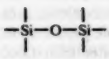
Bernward Deubzer, Burghausen, and Hermann Wilhelm, Braunau, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 474,391, Mar. 11, 1983, abandoned. This application Jun. 4, 1984, Ser. No. 616,796

Int. Cl.⁴ B01F *17/54, 17/52, 17/48;* **C09D** *5/02*

U.S. Cl. 524—43 **6 Claims**

1. An aqueous composition which is obtained by mixing water with an organosilicon compound having at least one



group per molecule and having aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, n-butyl, sec-butyl and methoxy ethylene radicals bonded to silicon via oxygen, from 1 to 15 percent by weight based on the weight of the organosilicon compound of a compound selected from the group consisting of polyvinyl alcohol, a water soluble cellulose ether containing hydroxyl groups and mixtures thereof, and sufficient acid to provide a composition having a pH of from 1 to 5 and then subsequently neutralizing the composition.

4,552,911

POLYCARBONATE MOLDING COMPOSITIONS HAVING IMPROVED FLAME RETARDANCE

Wolfgang Cohnen; Klaus Kircher; Peter R. Müller, all of Leverkusen, Fed. Rep. of Germany; Sivaram Krishnan, and Dieter Neuray, both of New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,152

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203905

Int. Cl.[4] C08K *5/34, 3/10, 5/56*

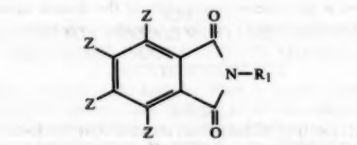
U.S. Cl. 524—94 **4 Claims**

1. A molding composition comprising

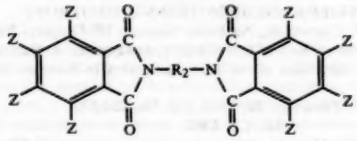
(a) a branched thermoplastic aromatic polycarbonate,

(b) an alkali or an alkaline earth metal salt of an organic or an inorganic acid

(c) a tetrahalogenophthalimide of the general formula I or II



(I)



(II)

wherein R_1 denotes a hydrogen atom, C_1–C_4 alkyl, C_6H_5, $C_{10}H_7$, C_6H_4X, $C_6H_3X_2$ or $C_6H_2X_3$ where X is chlorine or bromine and wherein R_2 is a bond, C_2–C_8 alkylene, C_6H_4 or p-diphenylene, and wherein Z is chlorine or bromine characterized in that it contains about 0.1 to about 7 percent relative to the weight of the composition of requisite bromine, said requisite bromine being obtained by either condensing into said (a) monomeric compounds containing aromatically bonded bromine or by admixing with said (a) a member selected from the group consisting of decabromodiphenyl ether, decabromodiphenyl, pentabromophenoxyethane di(tribromophenyl) tetrabromophthalate and low molecular weight polycarbonate based on tetrabromobisphenol A, provided that said (b) is present in an amount of from about 0.01 to about 1 percent, said (c) is present in an amount of from about 0.05 to about 5 percent and said monomeric compounds are condensed or said member is added at an amount of between about 0.5 and about 30 percent, said percents being relative to the weight of said composition.

4,552,912

FLAME RETARDENT POLYAMIDE COMPOSITIONS

Ian G. Williams, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 29, 1984, Ser. No. 584,907

Claims priority, application United Kingdom, Mar. 17, 1983, 8307407

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.[4] C08L *77/00;* **C08K** *5/34*

U.S. Cl. 524—100 **5 Claims**

1. A glass-reinforced, fire-retardant, arc-track resistant polyamide composition characterised in that it contains:

(a) at least 35% by weight of a fibre-forming polyamide,

(b) 15 to 30% by weight of glass fibres or particulate fillers,

(c) 16 to 30% by weight of melamine or melamine cyanurate,

(d) 1 to 10% by weight of brominated fire retardants selected from a brominated polyphenylene oxide or a brominated epoxy resin, and

(e) a synergist selected from zinc oxide, zinc borate, a mixture of zinc oxide and zinc borate and a mixture of antimony oxide and zinc borate, wherein the concentration of oxide present in the synergist is between 0 and 5%, the concentration of borate present is between 0 and 25% by weight, and the total weight of synergist is at least 1%, the weight percentages of the constituents (a), (b), (c), (d) and (e) totalling 100%.

4,552,913

ONE COMPONENT POLYURETHANE SMC SURFACE COAT

James D. Wolfe, North Canton, Ohio; Michael E. Kimball, West Brook, Me., and Richard E. Fruzzetti, Wadsworth, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 14, 1985, Ser. No. 691,247

Int. Cl.[4] C08L *75/08*

U.S. Cl. 524—240 **4 Claims**

1. A method of in-mold coating a molded shaped article composed of epoxy/glass fibers or vinyl ether/glass fibers comprising applying a stable one component polyurethane precursor comprising a polyurethane prepolymer having about 3 to 15% NCO by weight and a salt complex of a diamine to a shaped surface of the article closing the mold on the shaped article under a pressure of about 500 to 900 psi (34,475 to 1,379,000 pascals) and a temperature of at least 80° C. to spread the precursor over the surface of the shaped article and cure it, and open the mold to remove the polyurethane coated article.

4,552,914

HYDROCARBON BLOCK COPOLYMER WITH DISPERSED POLYSILOXANE

Robert E. Sterling, New Port Richey, Fla., assignor to Medical Research Associates, Ltd. #2, Clearwater, Fla.

Division of Ser. No. 465,586, Feb. 10, 1983, Pat. No. 4,511,354, which is a division of Ser. No. 147,475, May 7, 1980, Pat. No. 4,386,179. This application Dec. 4, 1984, Ser. No. 678,218

Int. Cl.[4] C08K *5/54*

U.S. Cl. 524—269 **9 Claims**

1. The composition of matter comprising:

(A) an elastomeric, thermoplastic hydrocarbon block copolymer, said copolymer having a total molecular weight of about 50,000 to 600,000

(B) polysiloxane dispersed substantially uniformly throughout said copolymer, having a viscosity of about 20 to 13,000 centistokes, and comprising about 0.1 to 8 percent of the total weight of said composition; and

(C) mineral oil dispersed substantially uniformly throughout said copolymer and comprising less than about 60 percent of the total weight of said composition.

4,552,915
LOW-TEMPERATURE SINTERED PORCELAIN COMPOSITION SUITABLE FOR FORMING

Toshio Fujita, and Kazuhiro Watanabe, both of Ohbu, Japan, assignors to Nippon Kouatsu Electric Co., Japan

Filed Mar. 27, 1984, Ser. No. 593,868
Claims priority, application Japan, Apr. 4, 1983, 58-58988
Int. Cl.[4] C08K *3/40, 5/09;* **C04B** *33/24, 35/81*
U.S. Cl. 524—322 **6 Claims**

1. A composition suitable for forming a low-temperature sintered porcelain, which comprises:

at least one thermoplastic resin selected from the group consisting of polystyrene, polyethylene and polypropylene . . . ca. 6–20 wt. parts;

butyral resin . . . ca. 1–11 wt. parts; and

lubricant . . . ca. 1–6 wt. parts;

mixed with 100 wt. parts of a mixture having the following composition:

vitreous component . . . ca. 40–60 wt. %;

aluminum oxide . . . ca. 10–30 wt. %;

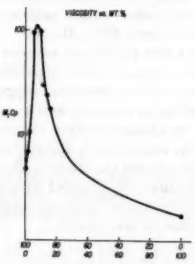
clay component . . . ca. 10–25 wt. %; and

binder . . . ca. 5–15 wt. %.

4,552,916
POLYMER COMPOSITIONS BASED ON SULFONATED IONOMERS AND AMINE CONTAINING POLYMERS

Robert D. Lundberg, Bridgewater; Dennis G. Peiffer, East Brunswick, and Robert R. Phillips, Spring Lk. Heights, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 547,911, Nov. 2, 1983, Pat. No. 4,480,063. This application Oct. 22, 1984, Ser. No. 663,123
The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.
Int. Cl.[4] C08K *5/05, 5/01;* **C08L** *91/00*
U.S. Cl. 524—399 **26 Claims**



1. A composition comprising interacting a blend of a neutralized sulfonated polymer containing from about 4 meq. of metal sulfonate per 100 g. of polymer up to 200 meq. per 100 g. of polymer, said sulfonate polymer being at least 95% neutralized, complexed with a second polymer containing basic nitrogen atoms incorporated, pyridine copolymerized or grafted thereon, said polymer containing basic nitrogen from about 4 meq. up to 500 meq. per 100 g. of polymer, wherein the molar ratio of metal sulfonate groups to that of basic nitrogen atoms varies from about 0.03 to about 30.

4,552,917
MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 203,212, Nov. 3, 1980, abandoned. This application Oct. 24, 1983, Ser. No. 544,049
Int. Cl.[4] C08L *75/00*
U.S. Cl. 524—590 **23 Claims**

1. A polyurethane liquid polymer composition comprising a urethane oligomer and a heat activated free radical generating catalyst, said urethane oligomer having a final free NCO content from 0% to about 20% and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyante with

(2) a polyether polyol having

(i) an average equivalent weight of about 75 to about 500,

(ii) an average functionality of at least about 3, with

(b) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of

(1) hydroxyalkyl acrylates,

(2) hydroxyalkyl methacrylates and

(3) hydroxyalkyl acrylamides.

4,552,918
FLAME RESISTANT STARCH-SULFAMATE PRODUCTS

Jürgen Lörcks, Rees-Bienen; Peter Obradovic, Kleve-Rindern; Peter Hochbahn, Kleve, and Hermann Feeser, Norderstedt, all of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 4, 1984, Ser. No. 616,865
Int. Cl.[4] C08L *3/00;* **C08J** *3/02*
U.S. Cl. 524—734 **24 Claims**

1. A process for preparing a flame-resistant starch sulfamate product comprising contacting starch with at least one sulfamate selected from the group consisting of alkali sulfamate and alkaline earth sulfamate in an amount from 3 to 40% by weight, based on starch dry substance, in the presence of at least 30% by weight water, based on total weight of the reaction mixture, at a temperature from 40° to 250° C., followed by incorporating a synthetic polymer in the starch-sulfamate product in an amount up to 80% by weight, based on total dry substance, by polymerizing a monomer in an aqueous-colloidal dispersion of the starch-sulfamate product.

4,552,919
ROOM TEMPERATURE-CURABLE POLYORGANOSILOXANE COMPOSITION WHOSE CURED PRODUCTS RESIST SOILING

Ryuzo Mikami, Ichihara, and Toshio Saruyama, Narashino, both of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 624,161
Claims priority, application Japan, Jul. 8, 1983, 58-124124
Int. Cl.[4] C08L *83/04*
U.S. Cl. 524—860 **15 Claims**

1. A room temperature-curable polyorganosiloxane composition consisting essentially of

(A) a polyorganosiloxane which possesses at least one silicon-bonded oxyalkylene radical of the general formula $-R^1O(R^2O)_nR^3$ wherein each R^1 and R^2 represent a divalent alkylene radical, R^3 is a radical selected from alkyl, acyl, and hydrogen and n is 0 or an integer with a value ≥ 1, and said polyorganosiloxane having at least 2 silanol groups per molecule and

(B) a curing agent.

4,552,920
SOLID RESIN COMPOSITION

Jugo Goto, Kawanishi, and Tsutomu Kubota, Mishima, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

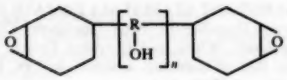
Filed Jan. 13, 1984, Ser. No. 570,587
Claims priority, application Japan, Jan. 17, 1983, 58-6257
Int. Cl.[4] C08L *29/04, 67/02*
U.S. Cl. 525—58 **12 Claims**

1. A solid resin composition which comprises

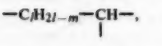
(a) 10 to 65 parts by weight of a carboxyl-modified product of a hydroxyl-containing polymer that is obtained by hydrolyzing an ethylene/vinyl acetate copolymer,

(b) 20 to 70 parts by weight of a carboxyl-terminated saturated polyester resin with not less than 30 weight % of alicyclic and/or spiro rings in the molecule, selected from the group consisting of (1) a reaction product of hydrogenated bisphenol A, trimethylolpropane and hexahydrophthalic anhydride, (2) a reaction product of spiroglycol, hydrogenated bisphenol A, trimethylolpropane and methylhexahydrophthalic anhydride, and (3) a reaction product of hydrogenated bisphenol A and succinic anhydride, and

(c) 5 to 25 parts by weight of a solid epoxy resin having two or more epoxy groups in the molecule and an epoxy equivalent of 80 to 400, selected from the group consisting of triglycidyl isocyanurate, diglycidyl terephthalate, diglycidyl ether of bisphenol S, and an epoxy resin of the formula:



wherein
R is



l is an integer of 2 to 40, m is 0, 1 or 2, and n is an integer of 1 to 10,
the sum of the components (a), (b) and (c) being 100 parts by weight.

4,552,921
METHOD OF FORMING A NONAQUEOUS STABLE EMULSION OF RUBBER IN POLYMERIZABLE MONOMER, AND THE POLYMERIZATION PROCESS AND THERMOPLASTIC COPOLYMER PRODUCED THEREBY

Wen B. Shyu, Chagrin Falls, Ohio; David A. Woodhead, Llantwit Major, Wales, and Vincent P. Quigley, Maple Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Feb. 25, 1985, Ser. No. 705,266
Int. Cl.[4] C08L *53/00*
U.S. Cl. 525—96 **38 Claims**

1. A method of fabricating a nonaqueous stable emulsion feedstock composition comprising a rubber, a mixture of at least two miscible organic monomers, at least one of said monomers being a solvent for the rubber, the mixture of said monomers being substantially a nonsolvent for said rubber, and a block copolymer having at least one component miscible with said rubber and at least one component miscible with at least one of said monomers, said block copolymer maintains the rubber in emulsified form within the mixture of organic monomers comprising mixing at least a portion of one of the rubber soluble monomers with the rubber and the block copolymer to form a first nonaqueous solution, mixing the remaining portion of said rubber soluble monomers with the remaining monomers to form a second nonaqueous solution, and combining said first and second solutions to form said nonaqueous stable emulsion feedstock comprising rubber or rubber-rich particles dispersed in said monomer mixture.

4,552,922
METHOD FOR MULTIPOLYMER SYNTHESIS OF ORGANIC COMPOUNDS

Abraham Patchornik, Ness Ziona; Yechiel Shai, Yehud, and Shimeon Pass, Kiryat ONO, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 506,862, Oct. 22, 1983, abandoned. This application Jun. 24, 1983, Ser. No. 507,443
Claims priority, application Israel, Jun. 22, 1982, 66094
Int. Cl.[4] C08L *89/00*; C07C *103/52*; C07H *15/12*
U.S. Cl. 525—54.11 **23 Claims**

1. In the method for synthesizing an organic compound B—A synthesizable by the reaction scheme

$$B+\alpha—A \rightarrow B—A+\alpha \quad (I)$$

comprising reacting B with the compound α—A under conditions sufficient to permit said reaction, to thereby yield α and the compound B—A, all of A, B, α—A and α being selected to permit said reaction (I) to proceed, the improvement by which said reaction (I) may proceed such that compound B—A is produced and recovered selectively and at high yield with excellent economy of reactants, comprising:

binding the reactant A to a first chemically modifiable polymeric support P by means of a functional group α', which may be the same as α, said first polymeric support and α'being selected with respect to any given set of reactants capable of reacting according to reaction (I) such that α' is attachable to said first polymeric support and, after being attached to said first polymeric support, is reactable with A to form the compound Ⓟ—α'—A, with bonds between α' and said first polymeric support and between α' and A which are of sufficient strength to permit A to detach from Ⓟ—α'—A when Ⓟ—α'—A is reacted with α under reaction conditions sufficient to form α—A and to prevent detachment of α' from said first polymer support under the same reaction conditions;

binding the reactant B to a second chemically modifiable polymeric support Ⓟ', said second polymeric support being capable of reacting with B to form Ⓟ' —B with a bond between said second polymeric support and B sufficiently strong to prevent detachment of B under reaction conditions under which said reaction scheme (I) may proceed to form Ⓟ' —B—A;

placing said first polymeric support in a first reaction zone having an entrance and a separate exit;

placing said second polymeric support in a second reaction zone having an entrance and a separate exit;

feeding α, in a liquid medium which does not interfere with any of the reactions, to the entrance of the first reaction zone, and causing the liquid medium carrying α to contact said first polymeric support having α'—A bound thereto, under reaction conditions sufficient to permit the following reaction to take place:

$$Ⓟ—\alpha'—A+\alpha \rightarrow Ⓟ—\alpha'+\alpha—A \quad (II)$$

removing the liquid medium which has contacted the first polymeric support through the exit of the first reaction zone;

feeding the liquid medium removed from the exit of the first reaction zone to the entrance of the second reaction zone and causing the liquid medium to contact said second polymeric support having B bound thereto, under reaction conditions sufficient to permit the following reaction to take place:

$$Ⓟ'—B+\alpha—A \rightarrow Ⓟ'—B—A+\alpha \quad (III)$$

removing the liquid medium which has contacted the second polymer support through the exit of the second reaction zone;

repeating said feeding and removing steps, using the liquid medium removed from the exit of the second reaction zone as the source of α in reaction (II), thereby circulating the liquid medium between the two reaction zones, until a desired amount of Ⓟ —B—A is produced;

cleaving B—A from said second polymeric support; and

recovering B—A.

4,552,923

OFFSET PRINTING INK COMPOSITION

Shozo Tsuchiya, Tokyo; Makoto Sasaki, Yokohama; Akio Oshima, Yokohama, and Hideo Hayashi, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 542,552, Oct. 17, 1983, abandoned, which is a continuation of Ser. No. 290,288, Aug. 6, 1981, abandoned. This application Nov. 14, 1984, Ser. No. 671,796

Claims priority, application Japan, Aug. 14, 1980, 55-111055

Int. Cl.⁴ C08L *61/10*

U.S. Cl. 525—68 **12 Claims**

1. An offset printing ink composition containing a vehicle resin (III) prepared by reating 5 to 100 parts by weight of a phenolic resin (component D) with 100 parts by weight of a modified resin (II) modified with an acid, said phenolic resin (component D) being prepared by the condensation of a phenol having an alkyl substituent group having 4 to 9 carbon atoms with formalin, said modified resin (II) modified with an acid, said modified resin (II) being prepared by reacting 1 to 15 parts by weight of a component C selected from the group consisting of unsaturated carboxylic acids, unsaturated carboxylic acid anhydrides and mixtures thereof with 100 parts by weight of a resin (I) obtained by copolymerizing 5 to 100 parts by weight of a straight-chain α-olefin (component B) with 100 parts by weight of a cyclic compound (component A) selected from the group consisting of cyclopentadiene, dicyclopentadiene, and mixtures thereof.

4,552,924

COMPATIBILIZATION OF POLYCARBONATE BLENDS

Niles R. Rosenquist, Evansville, and John A. Tyrell, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 557,006, Dec. 1, 1983, Pat. No. 4,496,693. This application Aug. 20, 1984, Ser. No. 642,093

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—146 **11 Claims**

1. A process of molding a polymer admixture with improved compatibility which comprises

a. preparing an admixture of (i) an aromatic carbonate polymer, (ii) a polyolefin or modified polyolefin in sufficient quantity to impact modify the aromatic carbonate polymer, and (iii) an amount of catalyst sufficient to compatibilize (i) and (ii) selected from the group consisting of hydroxides, oxides and amides of alkali and alkaline earth metals and

b. molding said admixture.

4,552,925

TETRAFLUOROETHYLENE/HEXAFLUOROPROPYLENE COPOLYMER HAVING IMPROVED EXTRUDABILITY

Shinichi Nakagawa, Nara; Kohzoh Asano, Osaka; Shinsuke Sakata, Osaka; Tokio Adachi, Osaka, and Shoji Kawachi, Nishinomiya, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 7, 1983, Ser. No. 472,838

Claims priority, application Japan, Mar. 8, 1982, 57-37067

Int. Cl.⁴ C08F *214/26, 214/28*

U.S. Cl. 525—200 **12 Claims**

1. A mixture of tetrafluoroethylene/hexafluoropropylene copolymers comprising:

(a) 10 to 70% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 100×10^4 to $1{,}000\times10^4$ poise; and

(b) 90 to 30% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 0.1×10^4 to 60×10^4 poise,

said mixture having a specific melt viscosity at 380° C. of from 1×10^4 to 60×10^4 poise, a melt flow ratio of at least 3.5 and a zero strength time (ZST, second) at 380° C. satisfying the following equation:

$$ZST \geq \frac{1}{3}x^2 + 17x + 107$$

wherein x is (specific melt viscosity)$\times10^4$.

5. A process for preparing the mixture of tetrafluoroethylene/hexafluoropropylene copolymers according to claim 1, which comprises mixing 10 to 70% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 100×10^4 to $1{,}000\times10^4$ poise and 90 to 30% by weight of a tetrafluoroethylene/hexafluoropropylene copolymer comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity of from 0.1×10^4 to 60×10^4 poise.

6. A process for preparing the mixture of tetrafluoroethylene/hexafluoropropylene copolymers according to claim 1, which comprises (a) polymerizing tetrafluoroethylene and hexafluoropropylene to form a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 100×10^4 to $1{,}000\times10^4$ poise and (b) polymerizing tetrafluoroethylene and hexafluoropropylene to form a tetrafluoroethylene/hexafluoropropylene copolymer portion comprising 5 to 20% by weight of hexafluoropropylene and having a specific melt viscosity at 380° C. of from 0.1×10^4 to 60×10^4 poise, the steps (a) and (b) being effected in any order or alternately and the mixture produced comprising 10 to 70% by weight of portion (a) and 90 to 30% by weight of portion (b).

11. The mixture of copolymers according to claim 1, wherein at least one of said copolymer portions contains a third comonomer component selected from the group consisting of perfluorovinyl ethers, perfluoroallyl ethers, trifluorochloroethylene, trifluoroethylene, vinylidene fluoride, ethylene, and propylene in an amount of not more than about 5% by weight.

12. The mixture of copolymers according to claim 1, which further comprises a perfluorocopolymer selected from the group consisting of polytetrafluoroethylene, copolymers of tetrafluoroethylene and perfluorovinyl ethers, and perfluoroallyl ethers in an amount of not more than about 20% by weight.

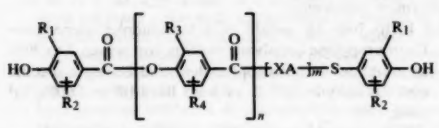
4,552,926

SUBSTITUTED 4-HYDROXYPHENYLTHIO BENZOATE STABILIZERS

John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,069
Int. Cl.[4] C08K *5/20, 5/36*
U.S. Cl. 524—219 9 Claims

1. A composition of matter comprising an organic material subject to oxidative thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of formula I



(I)

wherein

R_1, R_2, R_3 and R_4 are independently hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms.

X is —NH— or —S—;

A is alkylene of 1 to 10 carbon atoms, phenylene or cycloalkylene of 5 to 6 carbon atoms,

m is 1, and

n is 0 or 1.

4,552,927

CONDUCTING ORGANIC POLYMER BASED ON POLYPYRROLE

Leslie F. Warren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 9, 1983, Ser. No. 530,843
Int. Cl.[4] C08L *25/08, 33/26, 39/04*
U.S. Cl. 525—279 10 Claims

5. A conducting organic polymer comprising:

a polypyrrole; and

a non-nucleophilic polymeric anion.

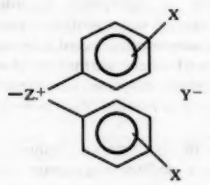
4,552,928

DI- AND TRIPHENYLATED CATION RADICAL POLYMERS AND THEIR USE AS DIELS-ALDER CATALYSTS

Nathan L. Bauld, and Dennis J. Bellville, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 317,109, Nov. 2, 1981, Pat. No. 4,503,195. This application Sep. 17, 1984, Ser. No. 651,059
Int. Cl.[4] C08F *8/44*
U.S. Cl. 525—326.2 9 Claims

1. A catalyst composition comprising an insoluble, solid polymer substrate having covalently attached thereon a plurality of diphenylated cation radical units of the formula:



wherein

Z^+ represents a monovalent cation radical selected from the group consisting of nitrogen, phosphorus, arsenic, antimony, and bismuth;

each X independently represents hydrogen or a substituted functional group selected from the group consisting of lower alkyl, halogen, hydroxy, alkyl halide, carbonyl, cyano, nitrile, and nitro groups; and

Y^- represents a monovalent anion;

said diphenylated cation radical covalently attached through one or more of its phenyl groups to the polymer substrate.

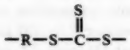
4,552,929

SULPHUR-CONTAINING POLYMERS USEFUL AS STABILIZING AGENTS FOR RUBBER VULCANIZATES

Albert F. L. G. Devaux, Mont Saint Guibert, and Philippe G. Moniotte, Heron, both of Belgium, assignors to Monsanto Europe, S.A., Brussels, Belgium

Filed Jun. 4, 1984, Ser. No. 617,064
Claims priority, application United Kingdom, Jun. 10, 1983, 8315977
Int. Cl.[4] C08C *19/20*
U.S. Cl. 525—332.6 7 Claims

1. A vulcanisable rubber composition comprising a diene rubber, sulphur and a vulcanisation accelerator, characterised in that the composition also contains a polymeric trithiocarbonate having a structure comprising repeating units of the formula



(I)

where R is a straight- or branched-chain alkylene group containing 5 to 16 carbon atoms.

4,552,930

VISBROKEN PROPYLENE-ETHYLENE RANDOM COPOLYMERS, PROCESS AND FILMS

Kiwami Hirota; Hideki Tamano, and Fumio Sakaguchi, all of Oita, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,479
Claims priority, application Japan, Aug. 22, 1981, 56-130855; Sep. 4, 1981, 56-138317; Apr. 20, 1982, 57-64654; Apr. 20, 1982, 57-64655; Jul. 2, 1982, 57-114057
Int. Cl.[4] C08F *8/06*
U.S. Cl. 525—333.8 6 Claims

1. A process for producing a propylene-ethylene random copolymer comprising the steps of:

copolymerizing propylene and ethylene in the presence of a Ziegler-type catalyst to form a random copolymer having an MFI, determined at 230° C. under a load of 2.16 kg, of 0.01 to 0.3 g/10 min; and

visbreaking the resultant copolymer in the presence of a peroxide to form a random copolymer having the following characteristics:

(a) a melting point of 115° C. to 140° C.;

(b) an ethylene content, determined by the C^{13}-NMR method, of 6 to 20 mol %;

(c) a block index, calculated according to the C^{13}-NMR method, of 1.1 or less;

(d) an MFI, determined at 230° C. under a load of 2.16 kg, of 0.5 to 100 g/10 min; and

(e) a ratio of the MLMFI, determined at 230° C. under a load of 10.0 kg, to the MFI, determined at 230° C. under a load of 2.16 kg, of 10 to 16, said peroxide having a half life-decomposition time of one second to ten minutes at the melting point of said copolymer.

4,552,931

PROCESS OF END-CAPPING A POLYIMIDE SYSTEM

Terry L. St. Clair, Poquoson, and Harold D. Burks, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

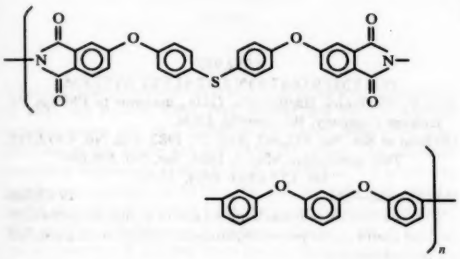
Filed Sep. 11, 1984, Ser. No. 649,328

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] C08G 73/10

U.S. Cl. 525—432 7 Claims

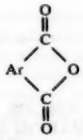
1. A process of endcapping a polyimide system having the uncapped chemical structure of



where n=5–100

comprising reacting an endcapping agent with the uncapped polyimide system for a controlled period of time and wherein the endcapping agent is selected from the group consisting of:

where R is any alkyl moiety,



where Ar is any aryl moiety,

a monofunctional amine of the general type $R—NH_2$ where R is any alkyl moiety, and $Ar—NH_2$ where Ar is any aryl moiety.

4,552,932

RADIATION CURABLE POLYURETHANES

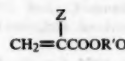
Charles S. Schollenberger, Hudson, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 30, 1984, Ser. No. 605,514

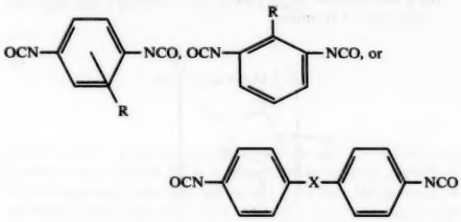
Int. Cl.[4] C08F 283/04; C08G 18/38

U.S. Cl. 525—440 11 Claims

1. Radiation curable terminal ethylenic unsaturated polyesterurethanes crystallizable at about 30° C. to about 80° C. comprising the reaction product of polyester glycols having molecular weights from about 2000 to about 6000, consisting of aliphatic glycols containing 2, 4, or 6 carbon atoms and selected from the group consisting of ethylene glycol, 1,4-butanediol, and 1,6-hexamethylene glycol, and aliphatic dicarboxylic acids of the formula HOOC—R—COOH wherein R is a divalent alkylene —R— radical containing 4 or 6 carbon atoms, an organic diisocyanate, and hydroxy acrylates and alkacrylates having the formula



wherein Z is hydrogen, methyl or ethyl and R′ is a divalent alkylene —R— radical containing 2 to 6 carbon atoms, in a molar ratio of 1 mol of polyester glycol to about 2 to 3 mols of organic diisocyanate to about 2 to 5 moles of hydroxy acrylate or alkacrylate, the organic diisocyanates have the general formulae



wherein R is hydrogen or methyl and X is a valence bond or a divalent alkylene —R″— radical containing 1 to 3 carbon atoms; and there is used an excess of said hydroxyacrylate or alkacrylate in relation to the free isocyanate group.

4,552,933

EXTENDED AMINE CURING AGENTS AND EPOXY RESINS CURED THEREWITH

Kathy B. Sellstrom, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,848

Int. Cl.[4] C08L 75/08, 63/02

U.S. Cl. 525—454 44 Claims

1. A method for curing a 1,2-epoxy resin which comprises intimately mixing said epoxy resin with an effective amount of an amine curing agent comprising a solution of a normally solid cured polyurethane elastomer in a 1,2-epoxy-interactive polyamine curing agent, whereby reaction of aminohydrogens of said amine with epoxy groups in said epoxy resin composition will result in the curing of said epoxy resin.

4,552,934

SAG RESISTANT AT ESSENTIALLY 1:1 RATIO TWO COMPONENT ADHESIVE

Thomas G. Rabito; Richard L. Cline, both of Ashland; Stephen M. Oswalt, Mansfield; Marvin T. Randleman, New London, and Michael E. Kimball, Ashland, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 6, 1981, Ser. No. 251,458

Int. Cl.[4] C08L 75/08

U.S. Cl. 525—458 11 Claims

1. A two component adhesive composed of a polyurethane component containing 3 to 15 percent by weight of free NCO and a curative component composed of a mixture of 0.01 to 0.1 equivalents of a polyamine having a molecular weight less than about 1000 and 0.1 to 1.0 equivalent of a hydroxyl terminated prepolymer formed by reacting 0.1 to 1.5 equivalents of a 150 to 3000 molecular weight polyol having 2 to 6 hydroxyls with 0.1 to 0.4 equivalents of an organic polyisocyanate.

4,552,935
HEAT-CURABLE EPOXY RESIN MIXTURES CONTAINING IMIDE COMPOUNDS AND CONDENSATION PRODUCTS OF PHENOLS, AMINES AND ALDEHYDES OR KETONES

Theobald Haug, Frenkendorf, and Friedrich Stockinger, Hölstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,845

Claims priority, application Switzerland, Jan. 13, 1983, 175/83

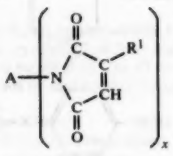
Int. Cl.[4] C08L *61/00*; C08G *8/32, 14/06*

U.S. Cl. 525—488 **17 Claims**

1. A heat-curbale mixture which comprises

(a) an epoxy resin having on average more than one 1,2-epoxy group per molecule,

(b) a momoimide or polyimide of an unsaturated dicarboxylic acid of formula I



(I)

in which A is an x-valent organic radical having at least 2 and at most 30 C atoms, R^1 is an H atom or methyl, and x is 1, 2 or 3, and

(c) a product of condensing (1) a phenol, (2) an amine and (3) an aldehyde or ketone in an acid medium by reacting with one another at a pH no higher than 6, wherein (1), (2) and (3) are

(1) a substituted monohydric phenol which is unsubstituted in the p-position and in one of the two o-positions or in both o-positions; an unsubstituted dihydric mononuclear phenol or an unsubstituted or substituted dihydric or polyhydric dinuclear or polynuclear phenol which has at least two reactive ring positions for reaction with an aldehyde or ketone;

(2) a substituted aromatic monoamine which has at least one reactive ring position for reaction with an aldehyde or ketone; an unsubstituted aromatic mononuclear or dinuclear diamine or an substituted aromatic mononuclear or dinuclear diamine which has at least two reactive ring positions for reaction with an aldehyde or ketone, and

(3) an aldehyde or ketone, in a mixing ratio on a molar basis in the reaction mixture of phenol to amine to aldehyde or ketone of 1:1:1.2 to 6:1:8, and

in the presence, in the curable mixture, of at least 1 equivalent of imide group per equivalent of amine-hydrogen and of at least 1 equivalent of phenolic hydroxyl group per epoxy equivalent.

4,552,936
WEATHERABLE ABRASION RESISTANT ETHERIFIED AMINOPLAST DERIVED COATING FOR PLASTIC SUBSTRATES

James E. Moore, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 17, 1984, Ser. No. 641,914

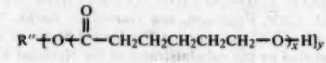
Int. Cl.[4] C08L *67/04*

U.S. Cl. 525—519 **4 Claims**

1. A curable protective coating composition for thermoplastic materials consisting essentially of

(i) an aminoplast derived compound;

(ii) polycaprolactone polyol of the general formula:



wherein R'' is a residue of a polyhydric alcohol; y is 2 or 3; x is on average greater than 3 but less than the value at which said polycaprolactone polyol is insoluble in a nonagressive solvent, and said polycaprolactone polyol has a molecular weight greater than 1000;

(iii) a solvent.

4,552,937
POLYMERIZATION CATALYST SYSTEM

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 412,347, Aug. 27, 1982, Pat. No. 4,472,519. This application May 1, 1984, Ser. No. 606,066

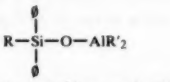
Int. Cl.[4] C08F *4/64, 10/02*

U.S. Cl. 526—125 **19 Claims**

1. A method of polymerizing an olefin comprising contacting said olefin under polymerization conditions with a catalyst system comprising

(1) an olefin polymerization catalyst comprising a compound containing a metal of Groups IVb, Vb, and VIb, and

(2) a cocatalyst comprising at least one compound of the formula



wherein each ∅ is an aryl radical, R is —O—AlR'_2 and wherein each R' is individually selected from hydrogen, halides, alkyl, aryl, alkoxy, and aryloxy radicals, with the further requirement that if one of the R' radicals attached to an Al atom is a halide, the other must be a radical other than hydrogen and that only one of the R' radicals attached to each Al atom can be hydrogen.

4,552,938
PROCESS FOR PREPARING DRY SOLID WATER ABSORBING POLYACRYLATE RESIN

Muneharu Mikita, Takatsuki; Shozo Tanioku, Nara, and Takayasu Touda, Osaka, all of Japan, assignors to American Colloid Company, Skokie, Ill.

Filed Oct. 25, 1982, Ser. No. 436,428

Claims priority, application Japan, Oct. 26, 1981, 56-171559; Jul. 21, 1982, 57-128266

Int. Cl.[4] C08F *220/06*

U.S. Cl. 526—240 **10 Claims**

1. A process for preparing a solid water absorbing resin comprising mixing an aqueous monomer solution of (A) potassium acrylate; and (B) a water-miscible or water-soluble polyvinyl monomer in a combined concentration of 55 to 80 wt. %; to form a mixed monomer solution wherein the monomers of the mixed monomer solution consist essentially of (A) and (B) and initiating polymerization of monomers (A) and (B) such that during polymerization, the exothermic heat of reaction is substantially the only heat energy used to accomplish polymerization, cross-linking and to drive off sufficient water to obtain a solid cross-linked resin.

4,552,939

PREPARATION OF SULFONATED COPOLYMERS BY SUSPENSION COPOLYMERIZATION

Warren A. Thaler, Flemington, N.J.; S. Richard Turner, Pittsford, N.Y., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1983, Ser. No. 563,062
Int. Cl.[4] C08F 228/02; C08K 5/17
U.S. Cl. 526—287 4 Claims

1. A water insoluble copolymer of a hydrocarbon monomer of the structure:

where R_1=aryl, aralkyl, alkaryl, vinyl, propenyl, isopropenyl or allyl and R_2=H, alkyl, aryl, aralkyl and alkaryl, and the tertiary amine salt of a sulfonate monomer where the total carbons of the amine salt are 14 to 24, where the sulfonate monomer represents a weight ratio of 0.005 to 0.8 where the product is a particle of 10 to 5,000 μm, wherein said unsulfonated monomer is selected from the group consisting of diolefins, styrene, alkylstyrene, butadiene, isoprene, and the sulfonated monomer is selected from the group consisting of amine salts of vinyl sulfonate, acrylamidomethyl propane sulfonate, sulfoethyl methacrylate.

4,552,940

STYRENE VISCOSITY MODIFIER OF GRAFTED STARCH POLYMER SOLUTIONS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 585,731, Mar. 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 501,577, Jun. 6, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 647,770
Int. Cl.[4] C08L 3/06
U.S. Cl. 527—312 17 Claims

1. A grafted starch polymer comprising from about 5 weight percent to about 95 weight percent of a starch substrate; from about 95 to about 5 weight percent of vinyl polymer segments comprising at least 50% by weight of said vinyl polymeric segments acrylamide monomer residue; and a sufficient amount of styrene to significantly reduce the viscosity of a solution of said graft polymer.

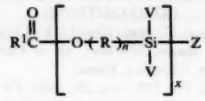
4,552,941

POLYSILOXANES FROM ACYLOXYSILANES USING ORGANO METALLIC CATALYST

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

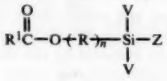
Continuation-in-part of Ser. No. 294,784, Aug. 10, 1981, Pat. No. 4,369,289, which is a continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,327,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Nov. 5, 1982, Ser. No. 439,173
Int. Cl.[4] C08G 77/08, 77/18
U.S. Cl. 528—16 28 Claims

1. A polysiloxane having the formula:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, R^1 is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is an alkoxy radical having one to 18 carbon atoms inclusive, n is an integer having a value of one to 18 inclusive and x is an integer having a value of at least 2.

5. A process of preparing a polysiloxane as defined in claim 1 which comprises reacting a mixture containing a metal carboxylate and a silane having the formula:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, R^1 is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is an alkoxy radical having one to 18 carbon atoms inclusive and n is an integer having a value of one to 18 inclusive.

4,552,942

SILANES AND COMPOSITIONS PREPARED THEREFROM

Franz-Heinrich Kreuzer, Martinsried; Gisela Glauberman, Munich, and Erhard Bosch, Burghausen, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 454,810, Dec. 30, 1982, Pat. No. 4,511,728. This application Sep. 14, 1984, Ser. No. 650,603
Claims priority, application Fed. Rep. of Germany, May 20, 1982, 3210337
Int. Cl.[4] C08G 77/04
U.S. Cl. 528—34 6 Claims

1. A composition which is stable under anhydrous conditions, but when exposed to moisture at room temperature, crosslinks to form an elastomer is prepared by mixing a diorganopolysiloxane containing terminal condensable groups selected from the class consisting of hydroxyl groups, alkoxy groups and mixtures thereof, with a silane selected from the group consisting of $R_nSi(OCR_2^1COZR)_{4-n}$ and oligomers thereof having at least three condensable groups per molecule and at least one additional substance, where R is selected from the group consisting of monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals, R^1 is selected from the group consisting of hydrogen and R, Z is selected from the group consisting of oxygen and the group

where R^1 is the same as above and n is 0 or 1.

4,552,943

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 506,179, Jun. 20, 1983, Pat. No. 4,463,158, which is a division of Ser. No. 364,575, Apr. 1, 1982, Pat. No. 4,439,577, which is a continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Mar. 12, 1984, Ser. No. 588,821

Int. Cl.[4] C08G *18/16*

U.S. Cl. 528—50 **14 Claims**

1. A process for preparing a polyurethane polymer product comprising mixing a polyurethane oligomer, a heat activated free radical generating catalyst, and at least one additional component selected from the group consisting of a reinforcing agent and a filler to a homogeneous blend, and then heating said mixture at a temperature adequate to activate said catalyst and cure said mixture, said polyurethane oligomer having an equivalent ratio of NCO to active hydrogen from about 0.5/1 to about 2/1 and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyanate with

(2) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of hydroxyl group-containing or amino group-containing:

(i) acrylates,

(ii) substituted acrylates,

(iii) methacrylates,

(iv) substituted methacrylates, and

(v) mixtures thereof, with

(b) a polyol reactant comprising

(1) a high functionality polyol having an average equivalent weight of from about 75 to about 500 and an average functionality of at least about 3, said high functionality polyol being prepared by reacting an alkylene oxide, or a mixture of alkylene oxides, with a polyhydric initiator comprising a carbohydrate or a carbohydrate derivative, and

(2) a chain extender having an average equivalent weight from about 31 to about 4,000 and an average functionality of about 2, said chain extender being employed in an amount ranging from about 20 to about 1,500 parts by weight per 100 parts by weight of said high functionality polyol.

4,552,944

PROCESS FOR PREPARING THERMALLY STABLE SUPER-SOFT POLYURETHANE ELASTOMER

Masayuki Kamiyama; Takashi Saito, and Kiyotsugu Asai, all of Kanagawa, Japan, assignors to Mitsui-Nisso Corporation, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,480

Claims priority, application Japan, Sep. 22, 1983, 58-174172

Int. Cl.[4] C08G *18/48*

U.S. Cl. 528—55 **22 Claims**

1. A process for preparing a super-soft polyurethane elastomer which comprises reacting a polymeric hydroxy compound with one organic polyisocyanate in the presence of at least an organometallic catalyst selected from the group consisting of nickel, cobalt, manganese, iron, copper, and zinc compounds, thereby producing a super-soft polyurethane elastomer which does not undergo substantial change in Shore hardness nor 100 percent tensile modulus upon storage at 100° C. for two weeks.

4,552,945

POLYAMIDE-POLYUREA POLYMERS BY THE RIM PROCESS

Louis M. Alberino, Cheshire; Dale F. Regelman, Wallingford, and Nancy P. Vespoli, Guilford, all of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 19, 1984, Ser. No. 683,457

Int. Cl.[4] C08G *18/30, 18/32*

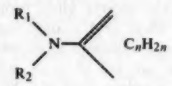
U.S. Cl. 528—62 **21 Claims**

1. A polyamide-polyurea containing polymer comprising the product of reaction injection molding of,

A. an organic polyisocyanate;

B. an organic compound having at least two active hydrogen containing groups and a M.W. of about 1500 to about 12,000; and C. from about 15 to about 160 parts per 100 parts of said (B) of a chain extender combination comprising

(i) an enamine having the formula



wherein C_nH_{2n} represents alkylene having 3 carbon atoms in succession in the chain R_1 and R_2 when taken separately are independently selected from the group consisting of lower-alkyl, aralkyl, cycloalkyl, and, when taken together with the nitrogen atom to which they are attached, represent a heterocyclic group having from 5 to 7 ring atoms,

(ii) an aromatic diamine having a M.W. of about 108 to about 400 wherein (i) and (ii) are present in the proportions by weight based on their combined weight of about 5 to about 45 percent and 95 to 55 percent respectively and optionally,

(iii) about 5 to about 50 percent by weight of the total weight of (i), (ii), and (iii) of an extender diol of M.W. of about 60 to about 400;

wherein the ratio of equivalents of said polyisocyanate to total equivalents of (B) and (C) is within the range of about 0.90:1 to 1.10:1.

4,552,946

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS, THE COMPOUNDS WHICH MAY BE OBTAINED ACCORDING TO THIS PROCESS, AND THE USE THEREOF FOR THE PRODUCTION OF POLYURETHANES

Hans-Joachim Scholl; Josef Pedain; Bernd Riberi, all of Cologne, and Gerhard Mennicken, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 571,982

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303221

Int. Cl.[4] C08G *18/76*

U.S. Cl. 528—67 **16 Claims**

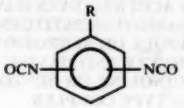
1. A process for the production of polyisocyanates containing isocyanurate groups which comprises

(1) trimerizing a portion of the isocyanate groups of organic polyisocyanates in the presence of a trimerization catalyst, and

(2) terminating the trimerization reaction at the desired degree of trimerization by the addition of a catalyst poison or by thermal decomposition of the trimerization catalyst or a combination of both,

wherein said organic polyisocyanates comprise

(a) from about 5 to 100 NCO equivalent percent of a compound or mixture of compounds corresponding to the formula:



wherein R represents a saturated, aliphatic hydrocarbon radical having from 8 to 15 carbon atoms and

(b) up to about 95 NCO equivalent percent, of organic polyisocyanates other than those in (a),

said NCO equivalent percent being based on the total number of isocyanate groups present in (a)+(b).

4,552,947

HEAT-RESISTING AROMATIC POLYESTER AND PROCESS FOR PREPARING THE SAME

Hiroshi Iwakiri; Masahiro Asada, and Kazuya Yonezawa, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

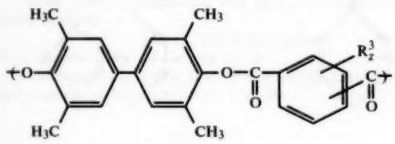
Filed Apr. 14, 1983, Ser. No. 484,848

Claims priority, application Japan, Apr. 19, 1982, 57-66121

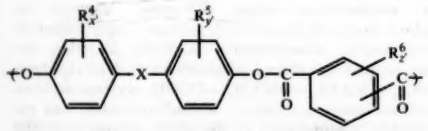
Int. Cl.⁴ C08G *63/18*

U.S. Cl. 528—126 **9 Claims**

1. An aromatic polyester comprising (a) 30 to 99% by mole of units of the formula (I):



and (b) units of the formula (II):



wherein R^3, R^4, R^5 and R^6 are the same or different and each is an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, chlorine atom or bromine atom, z, x', y' and z' are 0 or an integer of 1 to 4, and X is a bivalent group selected from the group consisting of an alkylidene group having 1 to 8 carbon atoms, a cycloalkylidene group having 1 to 8 carbon atoms, —O—, —S—, $—SO_2—$ and —CO—.

4,552,948

POLYESTER RESINS CAPABLE OF FORMING CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, and Thomas H. Wicker, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,929

Int. Cl.⁴ C08G *63/66*

U.S. Cl. 528—194 **10 Claims**

1. A polyester composition capable of being formed into molded containers having good gas barrier properties comprising the reaction product of

(A) a diol containing up to about 8 carbon atoms, and

(B) a diacid component comprising

(i) about 5 to 50 mole percent of at least one first diacid selected from the group consisting of 1,4-phenylenedioxy diacetic acid, 1,3-phenylenedioxy diacetic acid and 1,2-phenylenedioxy diacetic acid, and,

(ii) about 50 to about 95 mole percent of terephthalic acid,

wherein said polyester has an inherent viscosity of about 0.5 to 1.5.

4,552,949

POLYCARBONATE OF SPIRO DIHYDRIC PHENOL

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Oct. 21, 1983, Ser. No. 544,004

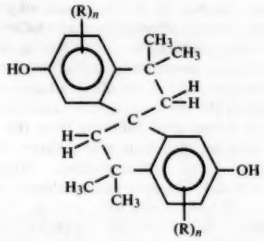
Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—201 **15 Claims**

1. Aromatic thermoplastic polymer exhibiting improved heat distortion temperatures derived from:

(i) a carbonate precursor; and

(ii) at least one spiro dihydric phenol selected from spiro dihydric phenols represented by the general formula



wherein:

R is independently selected from monovalent hydrocarbon radicals or halogen radicals; and

n is independently selected from positive integers having a value of from 0 to 3 inclusive.

4,552,950

POLYETHERIMIDE ESTERS

Russell J. McCready, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 11, 1985, Ser. No. 691,029

Int. Cl.⁴ C08G *69/08, 69/44*

U.S. Cl. 528—292 **20 Claims**

1. A polyetherimide ester composition comprising the reaction product of

(a) one or more low molecular weight diols, and

(b) one or more polyoxyalkylene diimide diacids.

4,552,951

DISPERSE AND ACID AZO DYES HAVING ONE OR TWO CINNAMOYL SUBSTITUENTS ON A PHENYL DIAZONIUM MOIETY AND CONTAINING AN ANILINE, TETRAHYDROQUINOLINE OR BENZOMORPHOLINE COUPLER

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 23, 1984, Ser. No. 573,243

Int. Cl.⁴ C09B *29/01, 29/085, 29/36, 29/44*

U.S. Cl. 534—770 **11 Claims**

1. A dye having the structure:

4,552,952

DISPERSE AND ACID AZO DYES HAVING ONE OR TWO CINNAMOYL SUBSTITUENTS ON A BENZOTHIAZOLE OR BENZOISOTHIAZOLE DIAZONIUM MOIETY AND HAVING AN ANILINE, TETRAHYDROQUINOLINE OR BENZOMORPHOLINE TYPE COUPLER

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

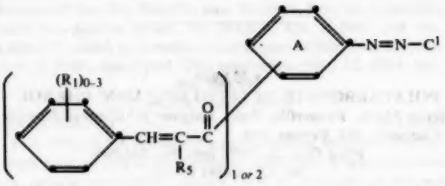
Filed Jan. 23, 1984, Ser. No. 573,241

Claims priority, application United Kingdom, Oct. 7, 1983, 8326868

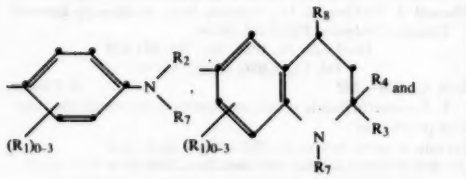
Int. Cl.[4] C09B 29/039, 29/045, 29/09, 29/36

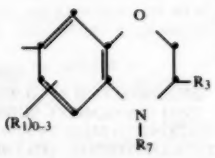
U.S. Cl. 534—782 8 Claims

1. A dye having the structure:

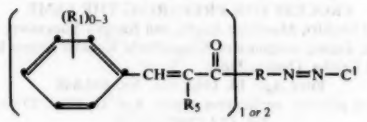


wherein the A ring is unsubstituted or substituted in any positions not occupied by cinnamoyl groups; R_5 is H or alkyl; and each R_1 and each A ring substituent is selected from alkyl, alkenyl or 2–6 carbon atoms, aryl, cyclohexyl, alkoxy, halogen, hydroxy, alkylsulfonyl, cyano, carbamoyl, alkanoyl, alkanoyloxy, aroyl, alkoxycarbonyl, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, alkanoylamino, $SO_3C_6H_5$, amino, alkylthio, thiocyano, arylsulfonyl, formyl, alkylcarbamoyl, dialkylcarbamoyl, NO_2, —SO_3M, —OSO_3M, —COOH, aryloxy, arylthio, alkylsulfonylamino, aroylamino, arylsulfonylamino, and cyclohexylthio, wherein each of the alkyl, alkenyl, aryl, and cyclohexyl moieties of the above groups, is unsubstituted or substituted with 1–3 substituents different from the said moiety and independently selected from alkanoyloxy, alkyl, alkenyl, succinimido, —NO_2, alkanoylamino, alkylsulfonylamino, 1-(2-pyrrolidono), halogen, cyano, alkoxy, aryl, cyclohexyl, hydroxy, —SO_3M, —OSO_3M, aryloxy, furyl, aroyloxy, alkoxycarbonyl, —SO_2N-(alkyl)$_2$, —NHCOO-alkyl, —NHCONH-alkyl, glutarimido, phthalimido, $CONH_2$, CONH-alkyl, CON(alkyl)$_2$, alkoxyalkoxy, alkylthio, arylthio, alkylsulfonyl, and arylsulfonyl, wherein M is selected from H^+, NH_4^+, Na^+, K^+, and the colorless cations of sulfuric or sulfonic acid salts of trimethylamine, triethylamine, tri(2-hydroxyethyl)amine, di(2-hydroxyethyl)amine, or N,N-dimethylaniline; and the coupler C^1 is selected from

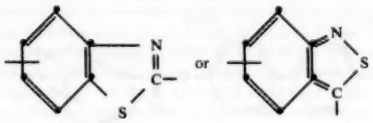




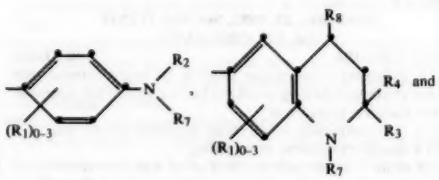
wherein each R_1 is as defined above; R_2 and R_7 are each selected independently from hydrogen, alkyl, alkenyl of 2–6 carbon atoms, aryl, and cyclohexyl, all of which groups are unsubstituted or substituted as defined above for the substituted R_1 groups; and R_3, R_4 and R_8 are each selected from hydrogen and alkyl.



wherein R is a divalent radical of the formula



which may be substituted in any position not occupied by a cinnamoyl group with an R_1 group comprising alkyl, alkenyl of 2–6 carbon atoms, aryl, cyclohexyl, alkoxy, halogen, hydroxy, alkylsulfonyl, cyano, carbamoyl, alkanoyl, alkanoyloxy, aroyl, alkoxycarbonyl, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, alkanoylamino, $SO_3C_6H_5$, alkylthio, thiocyano, arylsulfonyl, formyl, alkylcarbamoyl, dialkylcarbamoyl, NO_2, —SO_3M, —OSO_3M, —COOH, aryloxy, arylthio, alkylsulfonylamino, aroylamino, arylsulfonylamino, and cyclohexylthio, wherein each of the alkyl, alkenyl, aryl, and cyclohexyl moieties of the above groups, is unsubstituted or substituted with 1–3 substituents different from the said moiety and independently selected from alkanoyloxy, alkyl, alkenyl, succinimido, —NO_2, alkanoylamino, alkylsulfonylamino, 1-(2-pyrrolidono), halogen, cyano, alkoxy, aryl, cyclohexyl, hydroxy, —SO_3M, —OSO_3M, aryloxy, furyl, aroyloxy, alkoxycarbonyl, —SO_2N—(alkyl)$_2$, —NHCOO—alkyl, —NHCONH—alkyl, glutarimido, phthalimido, $CONH_2$, CONH—alkyl, CON(alkyl)$_2$, alkoxyalkoxy, alkylthio, arylthio, alkylsulfonyl, and arylsulfonyl, wherein M is selected from H^+, NH_4^+, Na^+, K^+, and the colorless cations of sulfuric acid or sulfonic acid salts of trimethylamine, triethylamine, tri(2-hydroxyethyl)amine, di(2-hydroxyethyl)amine, and N,N-dimethylaniline; and the coupler C^1 is selected from



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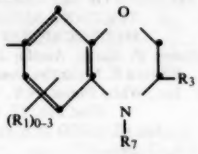


wherein R_1 is as defined above; R_2 and R_7 are each selected independently from hydrogen, alkyl, alkenyl of 2–6 carbons, aryl, and cyclohexyl, all of which groups are unsubstituted or substituted as defined above for the substituted R_1 groups; R_3, R_4 and R_8 are each selected from hydrogen and alkyl; and R_5 is H or alkyl.

4,552,953

WATER-INSOLUBLE MONOAZO DYESTUFFS, THEIR PREPARATION AND THEIR USE

Ulrich Bühler, Schöneck; Klaus Kühlein, Kelkheim; Horst Tappe, Dietzenbach; Maria Kallay, Königstein; Uwe Kosubek, Büttelborn, and Rudolf Löwenfeld, Dreieich, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

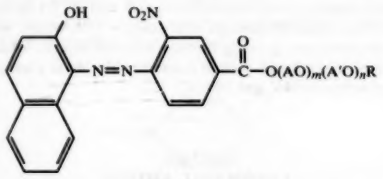
Continuation of Ser. No. 308,262, Oct. 5, 1981, abandoned. This application Dec. 16, 1982, Ser. No. 450,191

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049180

Int. Cl.⁴ C07C *107/108*

U.S. Cl. 534—886 **6 Claims**

1. Monoazo dyestuffs, free of carboxylic acid moieties or sulphonic acid moieties, of the formula



wherein A and A′ independently of one another are linear or branched alkylene having 2 to 6 carbon atoms;

R is hydrogen, alkyl having 1 to 4 carbon atoms, cycloalkyl having 5 to 6 carbon atoms, alkenyl having 3 to 5 carbon atoms, phenyl, benzyl, phenethyl, alkylcarbonyl having 1 to 4 carbon atoms or benzoyl;

m is a number from 1 to 5 and n is a number from 0 to 1.

4,552,954

CONCENTRATING NIKKOMICIN MIXTURES

Heinrich-Ferdinand Moeschler, Cologne; Christian Gölker, Wuppertal, and Peter M. Lange, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 265,049, May 19, 1981, abandoned. This application May 26, 1983, Ser. No. 497,433

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020722

Int. Cl.⁴ C07H *17/00*

U.S. Cl. 536—24 **12 Claims**

1. A process for concentrating nikkomicins (X) and (Z) from a dilute impure aqueous solution thereof containing ≧0.5% of a mixture of Nikkomicin (X) and (Z) comprising bringing the solution to a pH between about 4 and 7, with acetic acid, contacting the solution with a weakly basic ion exchanger selected from the group consisting of basic macroporous or gel-like polystyrene resins which are cross-linked with divinylbenzene and which are partly or completely substituted by primary, secondary, tertiary and quaternary nitrogen groups, basic macroporous or gel-like cross-linked polyacrylamides, basic macroporous or gel-like acrylates or methacrylates which are transamidated, basic macroporous aminomethylated polystyrene cross-linked with about 6% of divinylbenzene and basic gel-like dextrans, and eluting the adsorbed material with a lower aliphatic carboxylic acid thereby to obtain a concentrated mixture of nikkomicin (X) and nikkomicin (Z).

4,552,955

PROCESS FOR THE SYNTHESIS OF 4′,5′-UNSATURATED NUCLEOSIDES

Hiroshi Takaku, Chiba, and Takeshi Noda, Kanagawa; both of Japan, assignors to Sankyo Chemical Company, Limited, Tokyo, Japan

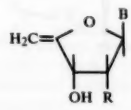
Filed Jun. 29, 1982, Ser. No. 393,254

Claims priority, application Japan, Jun. 29, 1981, 56-99708; Jun. 29, 1981, 56-0699709

Int. Cl.⁴ C07H *17/00*

U.S. Cl. 536—24 **18 Claims**

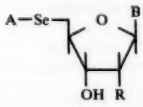
1. A process for the production of a 4′,5′-unsaturated nucleoside represented by the formula (I):



(I)

wherein R is a hydrogen atom or a hydroxyl group and B is a base selected from the group consisting of a purinyl group, a pyrimidinyl group, a pyrazolyl group, an imidazolyl group, a triazolyl group, a tetrazolyl group, a succinimido group, entenocytosine and entenoadenine; provided that B is a purinyl group, a pyrimidinyl group or a triazolyl group when R is a hydrogen atom, which process comprises:

(1) reacting a 5′-Se-(nitrophenyl)selenonucleoside represented by the formula (II):

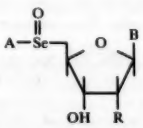


(II)

wherein R and B each has the same meaning as defined above and A is 2- or 4-nitrophenyl group, with hydrogen peroxide to obtain a selenoxide derivative, and

(2) reacting said selenoxide derivative with a tertiary amine.

18. A selenoxide derivative represented by the formula (III):



(III)

wherein R is a hydrogen atom or a hydroxyl group, A is 2- or 4-nitro-phenyl group and B is a base selected from the group consisting of a purinyl group, a pyrimidinyl group, a pyrazolyl group, an imidazolyl group, a triazolyl group, a tetrazolyl group, a succinimido group, entenocytosine and entenoadenine, provided that B is a purinyl group, a pyrimidinyl group or a triazolyl group when R is a hydrogen atom.

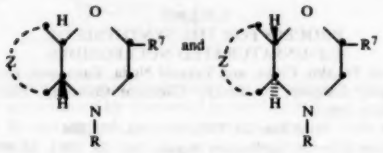
4,552,956

PARTIALLY HYDROGENATED PYRAZOLO, PYRIMIDO AND THIAZOLO[1,4]BENZOXAZINES

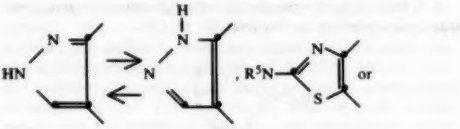
Richard N. Booher, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

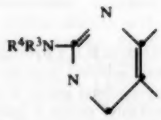
Filed Aug. 15, 1984, Ser. No. 640,897
Int. Cl.[4] C07D *498/04*
U.S. Cl. 544—101 22 Claims

1. A trans-(±) racemate composed of enantiomers of the formulas



wherein Z is one of the part structures





wherein R is C_{1-3} straight chain alkyl, R^7 is H, CH_2OH, CH_2X, CH_2—Y—C_{1-3} alkyl, CH_2CN or CH_2CONH_2 wherein X is a leaving group and Y is S, SO_2 or O; R^5 is H, lower alkyl or NR^3R^4, and R^3 and R^4 are individually H or R, and when R^3 is H, R^4 can additionally be acetyl; and pharmaceutically-acceptable, acid addition salts thereof.

4,552,957

METHOD OF SEPARATING PRIMARY AMINES FROM TERTIARY AMINES USING NON-POLAR HYDROCARBON SOLVENT WITH OR WITHOUT POLYHYDROXYLIC COMPOUND

Edward E. McEntire, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,465
Int. Cl.[4] C07D *265/30, 265/32, 295/12;* C07C *87/00*
U.S. Cl. 544—177 14 Claims

1. A method for the separation of primary and tertiary amines having close boiling points comprising

extracting a mixture comprising a primary amine and a tertiary amine having close boiling points with a non-polar hydrocarbon selected from the group consisting of aliphatic, aromatic and alkylaryl hydrocarbons and unreactive halocarbons which have from 1 to 30 carbon atoms to selectively remove the tertiary amine with the non-polar hydrocarbon.

4,552,958

METHOD OF SEPARATING PRIMARY AMINES FROM TERTIARY AMINES USING NON-POLAR HYDROCARBON SOLVENT AND WATER

Simon P. Burns, Austin; John M. Walton, Georgetown, and Edward E. McEntire, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,464
Int. Cl.[4] C07D *265/30, 265/32, 295/12;* C07C *87/00*
U.S. Cl. 544—177 11 Claims

1. A method for the separation of primary and tertiary amines having close boiling points comprising

extracting a mixture comprising a primary amine and a tertiary amine having close boiling points with a non-polar hydrocarbon; selected from the group consisting of methane, butane, isopentane, cyclohexane, heptane, dodecane, dodecene, kerosene, mineral oil, toluene, chlorobenzene and mixtures thereof, and water to selectively remove the tertiary amine with the non-polar hydrocarbon.

4,552,959

PROCESS FOR PRODUCING A SUSPENSION OF CYANURIC CHLORIDE IN WATER

Marianne Punzar, Bottmingen; Franz Marti, Dornach; Robert Mercier, Basel; Paul Tobler, and Rudolf Büttiker, both of Riehen, all of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Filed May 12, 1983, Ser. No. 493,920
Claims priority, application Switzerland, May 18, 1982, 3082/82; May 24, 1982, 3184/82
Int. Cl.[4] C07D *251/28;* B01J *13/00*
U.S. Cl. 544—190 5 Claims

1. A process for producing a suspension of cyanuric chloride in water having a temperature between 0° and 40° C., by bringing melted cyanuric chloride into contact with water, which process comprises spraying through a heated nozzle, which is immersed in the liquid, melted cyanuric chloride at a temperature of between 146° and 190° C.

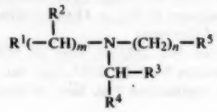
4,552,960

FUNGICIDAL AMINES

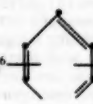
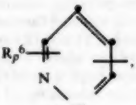
Eriks V. Krumkalns, Indianapolis, and David L. Smiley, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 506,174, Jun. 20, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 595,866
Int. Cl.[4] C07D *241/20*
U.S. Cl. 544—336 21 Claims

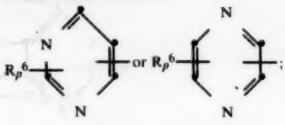
1. A method for controlling the growth of fungal diseases which comprises applying to the locus of the plant for which control is desired a disease inhibiting and non-herbicidal amount of a compound of the formula



wherein:

R^1 is R_p^6-  , 

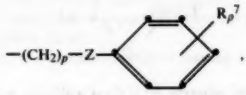
-continued



R^2 is hydrogen, C_1–C_6 alkyl, phenyl or phenyl monosubstituted with C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;

R^3 is hydrogen or phenyl;

R^4 is hydrogen, C_1–C_{12} alkyl, C_1–C_{10} haloalkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl,



C_3–C_8 cycloalkyl, 1,3-dioxyl or naphthalenyl;

R^5 is

R^6 is C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;

R^7 is C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogen, C_1–C_4 haloalkyl or C_1–C_4 haloalkoxy;

R^8 is C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogen, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy

Q is O, S or a direct link;

Z is O, S, —CH=CH— or a direct link;

m is 0, 1 or 2;

n is 0, 1, 2 or 3;

each p is 0, 1 or 2;

with the proviso that m and n are not simultaneously 0;

and the agronomically acceptable salts thereof.

4,552,961

PREPARATION OF POLYALKYLENE POLYAMINES USING PHOSPHORUS AMIDE CATALYST

William B. Herdle, Greenburgh, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 373,725, Apr. 30, 1982, abandoned. This application May 3, 1984, Ser. No. 606,000

Int. Cl.[4] **C07D** *295/12, 403/12, 403/14;* **C07C** *85/06*

U.S. Cl. 544—402 **22 Claims**

1. A process for producing predominantly linearly extended polyalkylene polyamines comprising:

(a) contacting (i) an alkylenediamine with (ii) a difunctional hydroxy alkylene compound selected from the group consisting of alkylene glycols and alkanolamines; (iii) in the presence of a catalytically effective amount of a phosphorus amide compound having at least one phosphorus-nitrogen bond; and

(b) recovering the polyalkylene polyamines.

4,552,962

ANTITUSSIVE 6-KETO MORPHINANS OF THE (+)-SERIES

Arnold Brossi, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

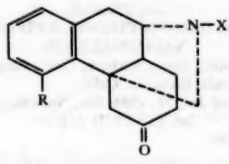
Filed Jan. 21, 1983, Ser. No. 459,796

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.[4] **C07D** *221/28*

U.S. Cl. 546—74 **6 Claims**

1. The unnatural isomer free from its optical antipode



R=H, OMe

x=H, Me

and pharmaceutically acceptable acid addition salts.

4,552,963

PREPARATION OF 1-ALKYL-1,4-DIHYDRO-4-OXO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLIC ACID

Venkataraman Ramachandran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 23, 1983, Ser. No. 497,026

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.[4] **C07D** *215/16, 211/70, 211/72*

U.S. Cl. 546—156 **16 Claims**

15. In a process for preparing a 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid by (a) reacting a haloprene with a 4-vinylpyridine to form a 4-(4-halocyclohex-3-enyl)pyridine, (b) aromatizing the 4-(4-halocyclohex-3-enyl)-pyridine to a 4-(4-halophenyl)pyridine, (c) nitrating the 4-(4-halophenyl)-pyridine to a 4-(4-halo-3-nitrophenyl)pyridine, (d) reducing the 4-(4-halo-3-nitrophenyl)pyridine to a 4-(3-aminophenyl)pyridine, (e) reacting the 4-(3-aminophenyl)pyridine with a dialkyl ethoxymethylenemalonate to form a dialkyl 3-(4-pyridyl)anilinomethylenemalonate, (f) cyclizing the dialkyl 3-(4-pyridyl)anilinomethylenemalonate to an alkyl 1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate, (g) N-alkylating the alkyl 1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate to an alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate, and (h) hydrolyzing the resultant ester; the improvement which comprises conducting the haloprene/4-vinylpyridine reaction in the presence of a boron trifluoride catalyst.

4,552,964

4-(1-CHLOROCYCLOHEX-3-ENYL)PYRIDINES AND PREPARATION OF 1-ALKYL-1,4-DIHYDRO-4-OXO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLIC ACID

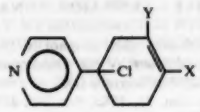
Venkataraman Ramachandran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 16, 1983, Ser. No. 532,703

Int. Cl.[4] **C07D** *215/16, 211/72, 211/70*

U.S. Cl. 546—156 **8 Claims**

1. A 4-(1-chlorocyclohex-3-enyl)pyridine corresponding to the formula:



wherein one of X and Y is hydrogen and the other is hydrogen, halo or an alkyl of 1–6 carbons.

4,552,965

2α, 3β, 4Aβ, 8Aα-DECAHYDRO-3-(4-PHENYL-1-PIPERIDINYL)-2-NAPHTHALENOL

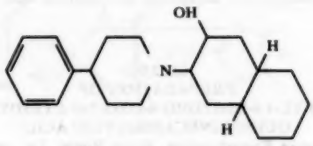
Stanley M. Parsons, Santa Barbara, Calif., assignor to University of California, Berkeley, Calif.

Filed Jul. 31, 1984, Ser. No. 636,183

Int. Cl.[4] C07D *211/14*

U.S. Cl. 546—206 **1 Claim**

1. A compound denominated (2α, 3β, 4a β, 8aα)-decahydro-3-(4-phenyl-1-piperidinyl)-2-naphthalenol (DPPN) having the chemical structure:



4,552,966

2-NITRO-4-(4-PYRIDINYL) BENZOIC ACIDS AND DERIVATIVES

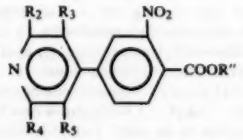
Paul F. Ranken, and Thomas J. Walter, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 8, 1983, Ser. No. 511,844

Int. Cl.[4] C07D *211/72, 215/16, 265/26*

U.S. Cl. 546—290 **4 Claims**

1. A compound corresponding to the formula:



wherein R″ is hydrogen, an alkali metal, or an alkyl group containing 1–6 carbons, and R_2, R_3, R_4, and R_5 are independently selected from hydrogen and aryl, aryloxyaryl, and halo substituents.

4,552,967

PROCESS FOR THE SYNTHESIS OF INTERMEDIATES IN THE PREPARATION OF DIAMINOPYRIDINES

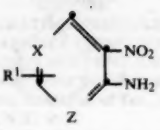
James M. Greene; Edward R. Lavagnino; Andrew J. Pike, all of Indianapolis, Ind., and Edward C. Taylor, Princeton, N.J., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 12, 1984, Ser. No. 570,144

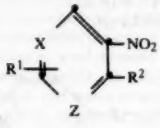
Int. Cl.[4] C07D *213/61*; C07B *29/00*

U.S. Cl. 546—307 **12 Claims**

1. A process for preparing an aminonitropyridine of the formula



wherein R^1 is hydrogen or C_1–C_4 alkyl and one of X and Z is CH and the other is N, comprising reacting an alkoxynitropyridine of the formula



or a salt thereof, wherein R^2 is C_1–C_4 alkoxy, with ammonium acetate at a temperature in the range of from about 50° C. to about 150° C.

4,552,968

O,O-DI-(SUBSTITUTED)-1-PHOSPHONOMETHYL-3-(SUBSTITUTED)-1,3-IMIDAZOL-4-ONE INTERMEDIATES

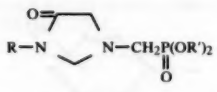
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 544,037, Oct. 24, 1983, , which is a division of Ser. No. 442,401, Nov. 17, 1982, Pat. No. 4,425,283. This application Feb. 15, 1985, Ser. No. 702,115

Int. Cl.[4] C07F *9/65*

U.S. Cl. 548—112 **4 Claims**

1. Compounds of the formula



wherein R is C_1–C_6 alkyl or C_3–C_6 alkenyl and R′ is C_1–C_8 alkyl or C_3–C_6 alkenyl.

4,552,969

3-ALKANOYL BENZOTHIAZOLINE COMPOUNDS USEFUL FOR TREATING CARDIOVASCULAR DISEASE

Jun-ichi Iwao, Takarazuka; Tadashi Iso, Sakai, and Masayuki Oya, Ibaraki, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

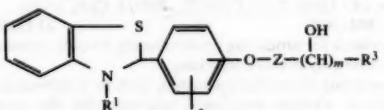
Division of Ser. No. 503,160, Apr. 14, 1983, Pat. No. 4,479,949. This application May 21, 1984, Ser. No. 612,322

Claims priority, application Japan, Sep. 12, 1981, 56-144148

Int. Cl.[4] C07D *91/16, 417/00*

U.S. Cl. 548—179 **24 Claims**

1. A compound of the formula (I) and salts thereof,



(I)

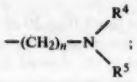
wherein

R^1 is lower alkanoyl;

R^2 is at least one group selected from the group consisting of

hydrogen, lower-alkyl, lower-alkoxy, hydroxy, halogen, nitro, halogeno-lower-alkyl and sulfamoyl;

R^3 is



R^4 and R^5, may be same or different and are selected from the group consisting of hydrogen, lower alkyl, cyclohexyl, phenyl-lower alkyl and substituted phenyl-lower alkyl wherein the phenyl nucleus is substituted by at least one group selected from the group consisting of lower alkyl, hydroxy, chloro, bromo, loweralkoxy, nitro, cyano, acetamino and lower alkylamino, hydroxy-lower alkyl, 3-pyridyl-lower alkyl, 1-piperidyl-lower alkyl and phenyl-carbonyl-lower alkyl;

Z is straight or branched alkylene having 1 to 6 carbon atoms;

m is 0 or 1;

n is 0 or 1;

wherein the terms lower alkyl, lower alkoxy and lower alkanoyl refer to groups having 1 to 6 carbon atoms.

20. A method of treatment for cardiovascular diseases which comprises administering a composition comprising a compound as in claim **1** and at least one pharmaceutically acceptable excipient.

4,552,970

SOLVATED SALTS OF DINITROPHENYLCYANAMIDES, AND A PROCESS FOR THE PREPARATION THEREOF

Otto Arndt, Hofheim am Taunus; Theodor Papenfuhs, Frankfurt am Main, and Wolfgang Tronich, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

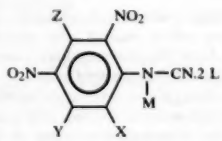
Continuation of Ser. No. 328,484, Dec. 8, 1981, abandoned. This application Feb. 1, 1984, Ser. No. 576,168

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046490

Int. Cl.[4] **C07C** *125/08, 127/19*

U.S. Cl. 548—543 **3 Claims**

1. A solid crystalline solvated salt of the formula



wherein

X is hydrogen, fluorine, chlorine, or bromine;

Y and Z are hydrogen, lower alkyl, or lower alkoxy;

M is sodium, potassium, or one molar equivalent of calcium; and

L is a dipolar aprotic solvent.

4,552,971

3α,15-BIS(CHLOROACETOXY)-4β-HYDROXY-12,13-EPOXYTRICHOTHEC-9-ENE USEFUL AS AN ANTITUMOR AGENT

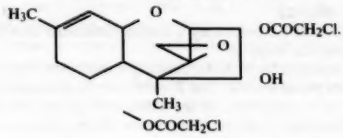
Henry Schmitz, Syracuse; Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 506,133, Jun. 20, 1983, Pat. No. 4,456,765, which is a division of Ser. No. 339,581, Jan. 15, 1982, Pat. No. 4,413,134, which is a division of Ser. No. 240,340, Mar. 4, 1981, Pat. No. 4,332,732, which is a division of Ser. No. 137,336, Apr. 4, 1980, Pat. No. 4,284,568. This application Feb. 27, 1984, Ser. No. 584,051

Int. Cl.[4] **C07D** *311/78*

U.S. Cl. 549—332 **1 Claim**

1. The compound having the formula



4,552,972

CHIRAL COPPER COMPLEX

Tadatoshi Aratani, Hyogo; Hiroshi Yoshihara, and Gohfu Susukamo, both of Osaku, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

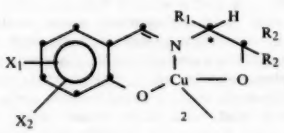
Filed May 24, 1984, Ser. No. 614,224

Claims priority, application Japan, Jun. 3, 1983, 58-99955

Int. Cl.[4] **C07F** *1/08*

U.S. Cl. 556—35 **5 Claims**

1. A chiral copper complex which is produced by the reaction of a chiral copper complex of the formula:



wherein R_1 is (a) alkyl group, or (b) aralkyl group; R_2 is (a) 2-alkoxyphenyl group, or (b) 2-alkoxy-5-alkylphenyl group; either one of X_1 and X_2 is (a) hydrogen atom, (b) halogen atom, (c) alkyl group, (d) alkoxy group, or (e) nitro group, or adjacent X_1 and X_2 together form a benzo group, with a mono-substituted hydrazine of the formula:

R_3NHNH_2

wherein R_3 is (a) aryl group, (b) aralkyl group, or (c) alkyl group.

4,552,973

PROCESS FOR THE PREPARATION OF DIMETHYLDICHLOROSILANE

Kurt Feldner, and Wolfgang Grape, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,501

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410644

Int. Cl.[4] **C07F** *7/12*

U.S. Cl. 556—469 **4 Claims**

1. A process for the preparation of dimethyldichlorosilane

from the low-boiling and high-boiling by-products of the direct synthesis of methylchlorosilanes, comprising reacting methyltrichlorosilane simultaneously with the low-boiling components having a high content of methyl groups and with the high-boiling non-cleavable components, in the presence of a catalyst, at a temperature between about 250° C. and 400° C. and under a pressure of up to 100 bar.

4,552,974

PROCESS FOR PRODUCING DIPHENYLMETHANE DICARBAMATES

Shinsuke Fukuoka, and Tomonari Watanabe, both of Okayama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 559,114

Claims priority, application Japan, Dec. 7, 1982, 57-213424; Dec. 9, 1982, 57-215911

Int. Cl.[4] C07C *125/073, 125/075*

U.S. Cl. 560—25 **33 Claims**

1. A process for producing a diphenylmethane dicarbamate, comprising the steps of:

a first reaction Step (A) for reacting a methylenating agent in liquid phase with at least 2 mols of an N-phenylcarbamate per mol equivalent of the methylene group of the methylenating agent in the presence of an aqueous solution containing 20 to 70 wt% of an inorganic acid selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid, polyphosphoric acid, hetero polyacid, and boric acid, at a temperature of 40° to 150° C., to obtain a first reaction mixture;

a first separation Step (B) for separating the first reaction mixture into the aqueous solution of an inorganic acid and an organic-phase reaction mixture substantially free from the inorganic acid;

a second reaction Step (C) for reacting the organic-phase reaction mixture under heat treatment at a temperature of 40° to 200° C. with an N-phenylcarbamate and in the presence of a carboxylic acid having a pKa of not more than 4 or a solid acid or a mixture of said carboxylic acid and said solid acid;

wherein the carboxylic acid is selected from the group consisting of formic acid, halogenated acetic acids, α-halogenated or α,α-dihalogenated aliphatic carboxylic acids, α-cyanoaliphatic carboxylic acids, acylacetic acids, alkoxy- or phenoxyacetic acids, halogenated benzoic acids, hydroxybenzoic acids, nitrated benzoic acids, glycolic acid, lactic acid, malic acids, tartaric acids, citric acid, malonic acid, maleic acid, fumaric acid, mandelic acid, phthalic acids, halogenated phthalic acids, furancarboxylic acids, thiophencarboxylic acids, thioacetic acid, cyclopropane-1,1-dicarboxylic acids, sulfoacetic acids, halogenated malonic acids, and halogenated succinic acids, and

wherein the solid acid is selected from the group consisting of

(i) acidic clay minerals and inorganic cation exchangers, or these acidic clay minerals and inorganic cation exchangers that have been treated with inorganic acids, and ammonium salts of these acidic clay minerals and inorganic cation exchangers which have been subjected to protonation treatment by calcination;

(ii) solidified acids that are prepared by supporting liquid acids on a carrier, followed by heat treatment;

(iii) solid sulfuric acid products that are prepared by first gelling water-soluble sols in the presence of sulfuric acid, adding sulfuric acid to dissolve the gel, and then cooling the solution to solidify, or precipitating a crystal from the solution, or heating the solid obtained to a temperature between 100° and 600° C.;

(iv) metal oxides or mixed metal oxides;

(v) acidic solid sulfates, nitrates, and phosphates, or these sulfates, nitrates and phosphates that are supported on a carrier;

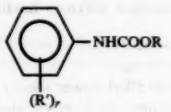
(vi) organic cation exchange resins having at least one acidic group of fluoroalkyl sulfonic acid group, fluoroalkyl carboxylic acid group or alkyl phosphoric acid group; and

(vii) inorganic oxides having either —R'''—SO^3—H or —R'''—COOH or both bound thereto wherein R''' is a divalent organic residual group or organometallic compound having not more than 30 carbon atoms;

in order to convert intermediate compounds having a methylene amino bond to the desired diphenylmethane dicarbamates by the intermolecular transfer reaction of the intermediate compounds with the N-phenylcarbamate, whereby a second reaction mixture is obtained; and

a second separation Step (D) for separating the acid away from the second reaction mixture to obtain a diphenylmethane dicarbamate,

said N-phenylcarbamate used in Step (A) to (C), which may be the same or different, being represented by the formula (I):



(I)

wherein R is an alkyl group having from 1 to 20 carbon atoms, an aromatic group or an alicyclic group having 3 to 30 carbon atoms; R' is hydrogen or a substituent selected from the group consisting of an alkyl group having from 1 to 20 carbon atoms, halogen atom, nitro group, cyano group, an alkoxy group having from 1 to 20 carbon atoms and an alicyclic group havng from 3 to 20 carbon atoms, provided that said substituents are bonded at the ortho- or meta-position to the urethane group; r is an integer of 0 to 4; when r is 2 or more, R' may represent the same or different substituents; and at least one hydrogen in R may be substituted by any of said substituents.

4,552,975

MANUFACTURING PROCESS FOR N-CARBOBENZYLOXY-L-GLUTAMIC ACID-α-CHOLINESTER SALT

Yoshito Nishizawa, deceased, late of Tokushima, Japan (by Hisako Nishizawa, heir), and Matao Kanaoka, Toyama, Japan, assignors to Moringa Milk Industry, Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1984, Ser. No. 640,190

Claims priority, application Japan, Aug. 13, 1983, 58-147289

Int. Cl.[4] C07C *125/065*

U.S. Cl. 560—163 **3 Claims**

1. A process for manufacturing N-carbobenzyloxy-L-glutamic acid-α-cholinester salt characterized by comprising the steps of;

(a) that N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-dicyclohexyl-ammonium salt is reacted with dimethylaminoethylchloride to form N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-dimethylaminoethyl ester,

(b) that obtained N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-dimethylaminoethyl ester is reacted with a quaternerizing agent for the dimethylamino-group to form N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-cholinester salt, and

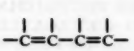
(c) that obtained N-carbobenzyloxy-γ-tert.butyl-L-glutamic acid-α-cholinester salt is subjected to mild acid treatment selectively removing of the tert.butyl-group at γ-position to obtain N-carbobenzyloxy-L-glutamic acid-α-cholinester salt.

4,552,976
PROCESS FOR OXIDATIVE DICARBONYLATION OF BUTADIENE

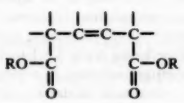
Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,470
Int. Cl.[4] C07C *67/38*
U.S. Cl. 560—204 8 Claims

1. A process for oxidative carbonylation of aliphatic conjugated diolefins containing 4 to 12 carbon atoms per molecule of the formula:



wherein each carbon is bonded either to hydrogen or a hydrocarbyl group, by reaction with carbon monoxide and oxygen in the presence of an alkanol coreactant containing 1 to 20 carbon atoms per molecule, to form an aliphatic dicarboxylic acid ester having the formula:



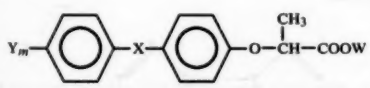
wherein R is a saturated alkyl group, said process being conducted in the presence of a heterogeneous supported palladium catalyst, a copper-containing cocatalyst and a lithium-containing cocatalyst, at a temperature of 80° C. to 150° C. and a pressure of from 500 psi to 1800 psi to effect the desired carbonylation reaction, wherein the carbon monoxide to oxygen ratio is from 5:1 to 20:1, the palladium catalyst is deposited on said support in a concentration range of 0.1 to 20 wt %, the concentration of copper-containing cocatalyst is between 0.1 wt % and 50 wt % and the concentration of lithium-containing cocatalyst is between 0.0001 wt % and 1.0 wt %.

4,552,977
PROCESS FOR THE PREPARATION OF (PHENOXY- OR BENZYL-)-PHENOXYPROPIONIC ACIDS AND THEIR ALKALI METAL SALTS

Manfred Koch, Eppstein, and Peter Herbrechtsmeier, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 158,596, Jun. 11, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,712
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854492; Dec. 11, 1979, 2949681
Int. Cl.[4] C07C *79/46*
U.S. Cl. 562—435 8 Claims

1. A process for the preparation of phenoxy- or benzyl-phenoxypropionic acid and the alkali metal salts thereof having the formula



(I)

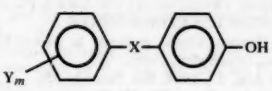
wherein

Y is a radical selected from the group consisting of halogen, CF_3, NO_2 and CN,

X is oxygen or CH_2,

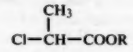
W is hydrogen, sodium or potassium, and

m is 1 or 2, and optically active D-isomers thereof, consisting essentially of dissolving in an organic solvent a phenol having the formula



(II)

wherein Y and m are as defined above and at least an equimolar amount of 2-chloropropionic acid or 2-chloropropionic acid lower alkyl ester having the formula



wherein R is hydrogen or (C_1–C_4)-alkyl to form an azeotropic mixture and water, adding at least twice the molar amount relative to said 2-chloropropionic acid or ester of an aqueous alkali hydroxide at its boiling temperature, removing by azeotropic distillation substantially all of the water introduced to or formed by the reaction and avoiding the formation of excess alkali by controlling the feed rate of said aqueous alkali hydroxide and the reaction temperature.

4,552,978
OXIDATION OF UNSATURATED ALDEHYDES

Wilfrid G. Shaw, Lyndhurst, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 12, 1983, Ser. No. 560,289
Int. Cl.[4] C07C *51/25, 57/055*
U.S. Cl. 562—535 4 Claims

1. A vapor phase process for producing acrylic acid from acrolein by oxidation of the unsaturated aldehyde with molecular oxygen, optionally in the presence of steam, and in the presence of a complex oxide catalyst having the elements and the ratios thereof represented by the empirical formula

$$Mo_aV_bZr_cX_dY_eO_f$$

wherein

X is one or more of Cu and Mg

Y is one or more of K, Rb, Cs, Sn, Ti, Cr, Re, Sb, Mn, Ge, Ca, Ba, Zn, Ag, Cd, La, As, Bi, B and W, and

a is 9–15

b is 0.5–5

c is 0.1–3

d is 0.01–2

e is 0–1

f is a number sufficient to satisfy the valence requirements of the other elements present, and

wherein the catalyst is essentially free of P, Ce, Fe, Al and Ni.

2. A vapor phase process for producing acrylic acid by oxidation of acrolein with molecular oxygen, optionally in the presence of steam, and in the presence of a complex oxide catalyst having the elements and the ratios thereof represented by the empirical formula:

$$Mo_aV_bZr_cX_dY_eO_f$$

wherein

X is one or more of Cu and Mg

Y is one or more of K, Rb, Cs, Sn, Ti, Cr, Re, Sb, Mn, Ge, Ca, Ba, Zn, Ag, Cd, La, As, Bi and B, and

a is 9–15

b is 0.5–5

c is 0.1–3

d is 0.01–2

e is 0–1

f is the number sufficient to satisfy the valence requirements of the other elements present, and

wherein the catalyst is essentially free of P, Ce, Al, Fe, W, and Ni.

4,552,979

PROCESS FOR TREATMENT OF UREA PLANT PROCESS CONDENSATE

Keith J. Stokes, Weston, Conn., assignor to James Chemical Engineering Inc., Greenwich, Conn.

Filed Aug. 27, 1984, Ser. No. 644,355
Int. Cl.[4] C07C *126/06*
U.S. Cl. 564—69 **16 Claims**

1. In a continuous process for the treatment of process condensate from a synthetic urea plant, said condensate containing urea values, the steps comprising:

(a) continuously subjecting said concentrate to the action of steam introduced countercurrently in a series of stripping zones, the residence time in at least one of said zones being sufficient to effect hydrolysis of a major portion of said urea values to yield ammonia and carbon dioxide;

(b) continuously subjecting the partially stripped process condensate to further stripping using a stream of hydrocarbon gas introduced counter-currently under pressure;

(c) continuously collecting liquid condensate from the latter step, passing the same through a heat exchanger to raise the temperature thereof and recycling the heated liquid to one of the first series of stripping zones; and

(d) continuously recovering as overhead from the first of the stripping zones, a gaseous stream comprising steam, hydrocarbon gas, ammonia and carbon dioxide; wherein substantially the whole of the process condensate introduced in step (a) is continuously converted into steam, ammonia and carbon dioxide and recovered in said gaseous stream taken as overhead.

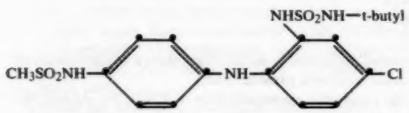
4,552,980

DYE PRECURSORS AND THEIR USE IN PHOTOGRAPHIC MATERIALS AND PROCESSES

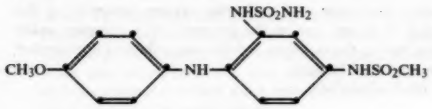
Rolf S. Gabrielsen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 373,915, May 3, 1982, Pat. No. 4,411,984. This application Apr. 25, 1983, Ser. No. 488,222
Int. Cl.[4] C07C *161/00*
U.S. Cl. 564—79 **1 Claim**

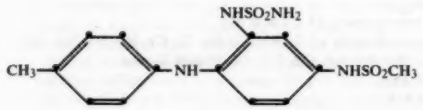
1. A diphenylamine selected from the group consisting of:



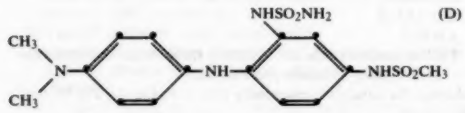
(A)



(B)

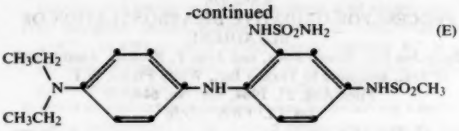


(C)



(D)

-continued



(E)

and combinations thereof.

4,552,981

PROCESS FOR THE PRODUCTION OF 5-NITRO-ACET-2,4-XYLIDINE

Karl W. Thiem, Charleston, and Daniel P. Vanderpool, Hanahan, both of S.C., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1981, Ser. No. 325,540
Int. Cl.[4] C07C *102/00*
U.S. Cl. 564—146 **8 Claims**

1. A process for preparing 5-nitro-acet-2,4-xylidine comprising:

(a) dissolving acet-2,4-xylidine in an aqueous sulfuric acid solution, said aqueous solution containing from 86 to 92% by weight of sulfuric acid, the weight ratio of sulfuric acid to acet-2,4-xylidine being from 3.5:1 to 6.5:1,

(b) nitrating the resultant solution at a temperature of from 0° to 15° C. in a mixed acid containing nitric acid, sulfuric acid and from 10 to 25% by weight water, and

(c) recovering 5-nitro-acet-2,4-xylidine.

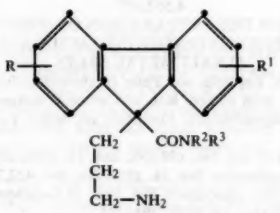
4,552,982

SYNTHESIS OF 9-CARBAMOYL-9-(3-AMINOPROPYL)FLUORENES

William B. Lacefield, and William Pfeifer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 1, 1983, Ser. No. 519,166
Int. Cl.[4] C07C *103/28*
U.S. Cl. 564—164 **7 Claims**

1. In a process for preparing a compound of the formula

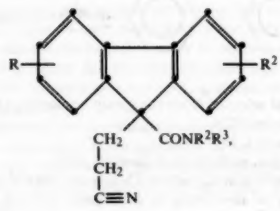


wherein:

R and R^1 independently are hydrogen, C_1–C_4 alkyl, fluoro or chloro; and

R^2 and R^3 independently are hydrogen or C_1–C_6 alkyl;

which includes catalytically hydrogenating a compound of the formula



the improvement comprising conducting the reaction in the presence of an acid medium stronger than glacial acetic acid.

4,552,983

PROCESS FOR THE PRODUCTION OF 4-(TRIALKYLAMMONIUM)-ACETOACETARYLIDES

Leander Tenud, and Synése Jolidon, both of Visp, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

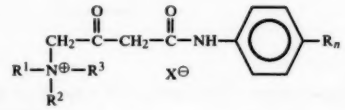
Division of Ser. No. 501,898, Jun. 7, 1983,. This application Sep. 20, 1984, Ser. No. 652,484

Claims priority, application Switzerland, Jun. 18, 1982, 3769/82

Int. Cl.⁴ C07C *103/42*

U.S. Cl. 564—200 **20 Claims**

1. 4-trialkylammonium)-acetoacetarylide having the formula:



wherein: R is H, a lower alkyl, —OCH_3, —OC_2H_5, —Cl, —Br, —NO_2 or —$NHCOCH_3$; n is 1 to 3; R^1, R^2 and R^3 each is an alkyl having 1 to 18 C atoms; and X is Cl or Br.

4,552,984

PROCESS FOR PREPARATION OF α,α-DIFLUOROALKOXY OR α,α-DIFLUOROALKYLTHIOPHENYL SULFONES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 28, 1982, Ser. No. 392,884

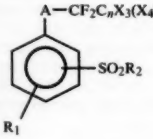
Claims priority, application France, Jan. 21, 1982, 82 00878

The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

Int. Cl.⁴ C07C *149/34*

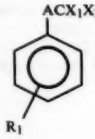
U.S. Cl. 568—29 **8 Claims**

1. A process for the preparation of α,α-difluoroalkoxy or α,α-difluoroalkylthiophenyl sulfones having the formula:



(I)

said process comprising reacting a polyhaloalkoxybenzene or a polyhaloalkylthiobenzene having the formula:



(II)

in a reaction vessel with a sulfonic acid, derivative, or precursor thereof having the formula:

$$R_2SO_2X_6 \quad \text{(III)}$$

in the presence of boron trifluoride in an amount such that the absolute pressure of the boron trifluoride within the reaction vessel exceeds 1 bar and in the presence of hydrofluoric acid as a solvent; wherein

A represents O or S;

X_1 and X_2 are identical or different and represent Cl, Br, I, or F;

X_3, X_4, and X_5 are identical or different and represent H, Cl, Br, I, or F;

X_6 represents halogen, OH, OR_3, NH_2, NHR_4, or NR_5R_6, wherein each of R_3, R_4, R_5, and R_6 is an aromatic or aliphatic radical;

n is zero or an integer equal to or less than 5 and when n equals zero X_3 in formula I is F or H;

R_1 represents at least one element or moiety selected from hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than the $ACX_1X_2C_nX_3(X_4)_n(X_5)_n$ group; and

R_2 is a radical selected from the group consisting of alkyl, phenyl, alkylphenyl, phenylalkyl, and phenyl bearing at least one halogen, NO_2, CN, NH_2, or COOH substituent.

4,552,985

PREPARATION OF ALDOLS

Franz Merger, Frankenthal; Peter Hettinger, Edingen-Neckarhausen, and Arno Lange, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

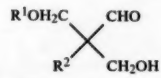
Filed Jun. 14, 1984, Ser. No. 620,558

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321517

Int. Cl.⁴ C07C *47/19*

U.S. Cl. 568—497 **4 Claims**

1. A process for the preparation of an aldol of the formula (I)



(I)

where R^1 is a straight-chain or branched alkyl radical of not more than 5 carbon atoms and R^2 is a straight-chain or branched alkyl radical of not more than 6 carbon atoms, wherein a corresponding 2-alkylacrolein compound of the formula $H_2C{=}CR^2{-}CHO$ with R^2 being a straight or branched chain alkyl of not more than 6 carbon atoms, a corresponding alcohol of the formula R^1OH with R^1 being a straight or branched alkyl of not more than 5 carbon atoms together with formaldehyde are reacted in the presence of a tertiary amine having a pK_B of from 9 to 11, and wherein from 4–6 moles of said alcohol and from 1 to 1.5 moles of formaldehyde are employed per mole of said 2-alkylacrolein in said reaction.

4,552,986

PROCESS FOR PREPARATION OF ETHANOL

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Nastuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 296,120, Aug. 25, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 538,008

Claims priority, application Japan, Sep. 5, 1980, 55-123032

Int. Cl.⁴ C07C *29/00, 31/08*

U.S. Cl. 568—902 **37 Claims**

1. A process for preparing ethanol from methanol, carbon monoxide and hydrogen, which comprises using an insoluble catalyst selected from the group consisting of the following two catalyst:

the first catalyst consisting of one of a powdery cobalt phosphate, a molded cobalt phosphate, and cobalt phosphate supported on a carrier; and

the second catalyst consisting of (a) one of a powdery cobalt phosphate, a molded cobalt phosphate, and cobalt phosphate supported on a carrier plus (b) at least one of a platinum group metal itself, an oxide of a platinum group metal, a chloride of a platinum group metal, a fluoride of a platinum group metal supported on a carrier, and an alkyl phosphine.

4,552,987

INITIATOR FOR A CONTACTLESS SWITCH

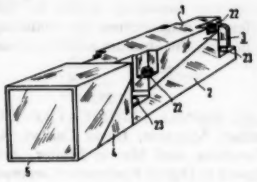
Josef Stebegg, Erlangen, and Wolfgang Miek, Amberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,904

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326401

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 174—52 R **11 Claims**



1. In an initiator for a contactless switch comprising, in combination:

(a) a support section having a face side and a plurality of lateral sides, said support section defining a longitudinal axis substantially perpendicular to said face side;

(b) a prism-shaped fastening element having a triangular profile formed by three sides, a first one of said three sides being mounted on said face of said support section and being selectively rotatable about said longitudinal axis, and a second of said three sides defining a central axis perpendicular thereto which is at an acute angle with respect to said longitudinal axis;

(c) a control section having an actuation side and a bevelled side, substantially opposite said actuation side, said control section being mounted on said second side of said fastening element and being selectively rotatable about said central axis, thereby permitting said actuation side of said control section to assume different positions with respect to said front and lateral sides of said support section where it faces away from said face side or is arranged in parallel with said lateral sides;

the improvement wherein the corner of said support section between said face side and two of said lateral sides thereof is bevelled such that, after said fastening element has been rotated through a predetermined angle about said longitudinal axis, said control section can be rotated about said central axis by 180° and, thereafter, can be rotated together with said fastening element about said longitudinal axis.

4,552,988

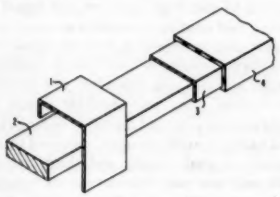
STRIPPABLE INSULATED WIRE AND METHOD OF MAKING SAME

Norman G. Haderer, Briston, Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,423

Int. Cl.⁴ H02G *15/02;* **H01B** *7/00, 13/00*

U.S. Cl. 174—74 R **17 Claims**



1. A method of making an insulated single conductor, the insulation of which can be easily removed from at least one predetermined location, comprising

(A) covering the entire circumference of a bare conductor only at each predetermined location with a metal foil that does not adhere to said conductor; and

(B) completely covering said conductor and said metal foil with said insulation.

13. An insulated wire that can be easily stripped only at predetermined locations along its length comprising

(A) a single bare wire;

(B) a metal foil that does not adhere to said wire covering the entire circumference of said wire only at said predetermined locations; and

(C) insulation that completely covers said foil and said wire.

4,552,989

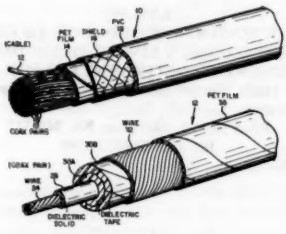
MINIATURE COAXIAL CONDUCTOR PAIR AND MULTI-CONDUCTOR CABLE INCORPORATING SAME

Richard G. Sass, Portland, Oreg., assignor to National Electric Control Company, Portland, Oreg.

Filed Jul. 24, 1984, Ser. No. 634,316

Int. Cl.⁴ H01B *11/00*

U.S. Cl. 174—103 **12 Claims**



1. A coaxial conductor pair, comprising:

(a) an inner electrical conductor:

(b) a dielectric system comprising

(i) a tubular layer of substantially solid dielectric material, selected from the group consisting essentially of polymeric fluorocarbon, high density polyethylene and mixtures thereof, surrounding said inner conductor in physical contact therewith, and

(ii) a wrapping of dielectric tape material, surrounding said tubular layer and having a dielectric constant less than 2 and a radial thickness greater than that of said tubular layer; and

(c) an outer electrical conductor surrounding said dielectric system.

10. The flexible cable of claim **9** wherein said coaxial conductor pairs are laid helically within said cover layer.

4,552,990

INSULATED CONDUCTOR FOR TRANSFORMER WINDINGS AND OTHER INDUCTIVE APPARATUS

Bo G. Persson, and Erich Spicar, both of Ludvika, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Continuation of Ser. No. 214,570, Dec. 8, 1980, abandoned. This application May 19, 1983, Ser. No. 495,727

Claims priority, application Sweden, Dec. 11, 1979, 7910171; Oct. 20, 1980, 8007350

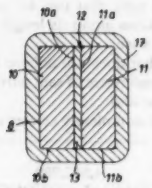
Int. Cl.⁴ H01B *11/02*

U.S. Cl. 174—117 FF **11 Claims**

1. An insulated winding electrical conductor for electrically inductive apparatus, comprising:

two uninsulated, at least substantially rectangular-shaped, conductor strands positioned with a flat side of one conductor strand confronting a flat side of another conductor strand;

an electrically insulating layer being sandwiched between the flat sides of said two uninsulated conductor strands and including a solid electrically insulating spacer material for permanently maintaining said two uninsulated conductor strands in spaced relationship with one another, and



having material forming a glue joint joining said electrically insulating layer and said two uninsulated conductor strands; and

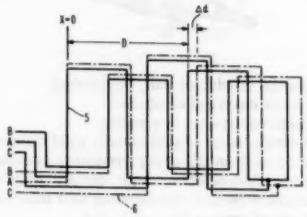
an insulating material surrounding the exposed surfaces of said two uninsulated conductor strands.

4,552,991

ABSOLUTE POSITION COORDINATE DETERMINING DEVICE EMPLOYING A SINGLE PHASE DIFFERENCE MEASUREMENT TO DETERMINE CURSOR POSITION

Leonard R. Hulls, North Falmouth, Mass., assignor to Numonics Corporation, Lansdale, Pa.

Filed Nov. 3, 1983, Ser. No. 548,317
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—19 **6 Claims**



1. Apparatus for determining position coordinates of points on a surface, said apparatus including:

a. two conductive grid-structure systems orthogonally disposed relative to each other in planes parallel to said surface, each system comprising first and second multiterminal conductive grid structures each grid structure having 'n' terminals, where 'n' is an odd integer greater than one, each grid structure comprising a plurality of substantially equally-spaced parallel grid conductors located parallel to said surface with adjacent conductors being connected to different terminals, each of said conductors having its one end remote from its terminal electrically connected to a corresponding remote end of each of the other of said conductors, said parallel grid conductors being at right angles to a first axis of said surface, each of said conductors of said first grid structure having the same pitch and each of said conductors of said second grid structure having the same pitch, the pitch of said second grid structure being slightly different from the pitch of the first grid structure;

b. a cursor structure having a conductive coil element adapted to be moved in any direction parallel to and in close cooperative relationship to the plane of said grid conductors;

c. input means for applying to said cursor coil an alternating-current excitation signal for inducing signal voltages in said grid structures;

d. first phase-shift network means for combining signal voltages induced in said first grid structure to produce a first signal;

e. second phase-shift network means for combining signal voltages induced in said second grid structure to produce a second signal;

f. phase difference measuring means; and

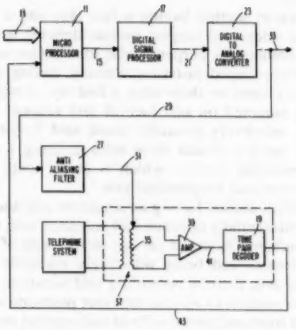
g. means for applying said first and second signals to said phase-difference measuring means for making a single phase-difference measurement for producing a monotonic signal indicating the absolute position of said cursor.

4,552,992

ANALOG SIGNAL VERIFICATION CIRCUIT

Edward Bruckert, Maynard; David Conroy, Acton; Richard Ellison, Worcester, and Martin Minow, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 12, 1983, Ser. No. 560,237
Int. Cl.[4] H04L *25/02*; G06F *15/46*
U.S. Cl. 178—69 G **6 Claims**

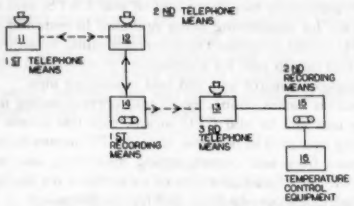


1. In a system which produces analog signals from digital signals, and which system includes a data processing means, having input and output means, and which is formed to produce groups of coded digital signals, each group representative of a different character, means to verify that the system is acceptably handling digital signal transmissions, as well as digital to analog transformations, comprising in combination: high speed digital signal processing means, connected through first circuitry means to receive said coded digital signals and formed to have program means which in response to said coded digital signals cause said high speed digital signal processing means to generate, at high speeds, a pair of digitized waveforms, each of said waveforms representing a different frequency; said high speed digital signal processing means further formed to combine said pair of digitized waveforms into a combined waveform signal; digital to analog converter means connected to said high speed digital signal processing means to receive said combined waveform signal therefrom in order to convert said combined waveform signal into an analog waveform signal, whereby said analog waveform signal represents a tone, and said tone represents one of said groups of coded digital signals; tone pair decoder means connected, through second circuitry, to said digital to analog converter, to transform said analog waveform signal received therefrom into a group of coded digital signals; and third circuitry means connecting the said tone pair decoder means to said data processing means to transmit coded digital signals thereto to be compared with said coded digital signals originally sent to said high speed digital signal processing means.

4,552,993
TELEPHONE ACTIVATION APPARATUS

Paul D. Hales, P. O. Box 7573, High Point, N.C. 27264

Filed Apr. 12, 1984, Ser. No. 599,719
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 A 8 Claims

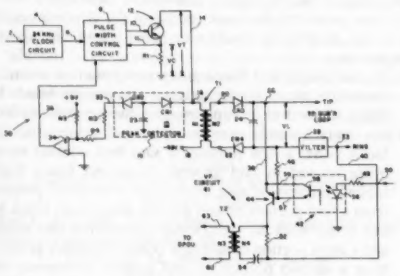


1. Telephone activation apparatus comprising: a first remote telephone means, a second telephone means, said remote telephone means for first communicating with said second telephone means, third telephone means, recording means, said recording means in communication with said second and said third telephone means for activating said third telephone means upon communication from said remote telephone means to said second telephone means, said third telephone means upon activation by said recording means being communicable with said remote telephone means, said third telephone means for activating equipment upon communication from said remote telephone means whereby said remote telephone means by secondly communicating with said third telephone means can thereby activate equipment from a remote location.

4,552,994
APPARATUS FOR ISOLATING THE VOICE FREQUENCY PATH FROM THE FLOATING BATTERY FEED DURING SIGNALLING

Constantine V. Skidanenko, Menlo Park, and Gregor D. McGibbon, San Carlos, both of Calif., assignors to GTE Lenkurt Incorporated Communication Systems, Phoenix, Ariz.

Filed Dec. 13, 1982, Ser. No. 449,026
Int. Cl.[4] H04M *7/00*
U.S. Cl. 179—16 AA 4 Claims



1. In a circuit for providing floating battery feed current to a subscriber loop, apparatus for disassociating an associated voice frequency circuit from the subscriber loop tip and ring leads during signaling, which comprises:

said associated voice frequency circuit including a voice frequency transformer having a primary winding connected to a voice frequency path, and having a secondary winding;

a DC blocking capacitor electrically connected between one terminal of said secondary winding and said ring lead;

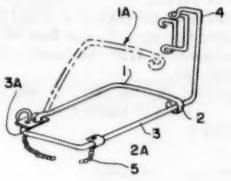
a dial pulse originating channel unit means having input leads connected to said voice frequency path and having a control lead on which appears a signal of one binary state to indicate the termination of dial pulsing and after a prolonged delay an output signal of the other binary state; and

transfer means electrically connected between the other terminal of said secondary winding and said tip lead, said transfer means being responsive to the output state signal on said control lead so as to insulate the voice frequency circuit from the tip and ring leads when dial pulsing occurs.

4,552,995
PORTABLE CORDLESS PHONE HOLDER

James B. Huntley, Washington, D.C., assignor to 2JT, Inc., Washington, D.C.

Filed Jul. 9, 1983, Ser. No. 515,250
Int. Cl.[4] H04M *1/02*
U.S. Cl. 179—147 1 Claim



1. An apparatus for holding a cordless phone comprising a first generally L-shaped wire having a short leg and a longer leg, wherein the shorter leg rests in front of the neck and across the chest of a user, the first L-shaped wire further including an extension from the longer leg including a bracket means for removably attaching a cordless telephone, a second L-shaped wire having a short and longer leg wherein the end of said longer leg is pivotally attached to the end of said shorter leg of said first L-shaped wire and wherein an end of said shorter leg of said second L-shaped wire is included a latch means for connection to the end of said longer leg of said first L-shaped wire thereby forming a rectangle with said first and second L-shaped wires and an adjustable strap means connected between the two ends of the short arm of said first L-shaped wire for fastening under the arm of the user.

4,552,996
METHOD AND APPARATUS FOR EVALUATING NOISE LEVEL ON A TELEPHONE CHANNEL

Guy de Bergh, Chatou, France, assignor to Compagnie Industrielle des Telecommunications, Paris, France

Filed Nov. 10, 1983, Ser. No. 550,661
Claims priority, application France, Nov. 10, 1982, 82 18854
Int. Cl.[4] H04M *3/32*
U.S. Cl. 179—175.2 C 15 Claims

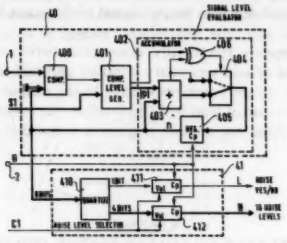
1. A method of evaluating a noise level on a telephone channel on the basis of a signal present on the channel during successive time intervals of substantially equal duration, the method comprising the steps of:

assigning the noise level on said channel to a given "noise level" range made up of a limited defined set of discrete level values;

observing successive signal level values present on the channel and selecting those observed values which lie in said noise level range; and

keeping records of different selected signal level values

expressed in terms of said discrete values to take as being representative of the noise level on the channel that one of



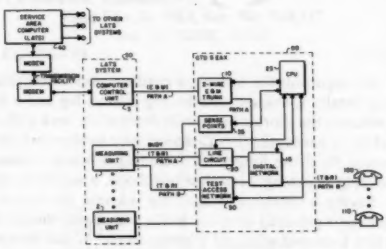
the discrete values on which the majority of the selected signal level values are concentrated.

4,552,997

ARRANGEMENT FOR LOOP ANALYSIS TESTING FOR A DIGITAL SWITCHING SYSTEM

William R. Daniels, Chicago, Ill., and John S. Young, Scottsdale, Ariz., assignors to GTE Automatic Electric Incorporated, Northlake, Del.

Filed Dec. 28, 1983, Ser. No. 566,247
Int. Cl.[4] H04B *3/46*
U.S. Cl. 179—175.3 R **21 Claims**



1. In an arrangement for loop analysis testing for a digital switching system, a loop analysis and test system (LATS) having a computer control unit and at least one measuring unit, each being connectable to said digital switching system for testing connections of said digital switching system to a plurality of subscriber's lines, said arrangement for loop analysis testing comprising:

CPU means;

a plurality of sense point means connected to said CPU means;

a plurality of connections, a connection from each of said plurality of sense point means to a corresponding measuring unit;

each said sense point means being operated to contain a first logic value for a busy condition of said corresponding measuring unit or alternatively each said sense point means being operated to contain a second logic value for an idle condition of said corresponding measuring unit; and

said CPU being operated to interrogate each said sense point means for determining said busy and said idle condition of each said corresponding measuring unit;

first means for connecting being connectable to said computer control unit of said LATS and being connected to said CPU means, said first means for connecting being operated in response to a request from said computer control unit and said CPU means to connect said computer control unit to said digital switching system;

digital switching means connected to said first means for connecting and to said CPU means, said digital switching means being operated in response to said CPU means to selectively connect said first means for connecting through said digital switching means to a particular output port of said digital switching means;

second means for connecting being connectable between said output port of said digital switching means and a corresponding measuring unit of said LATS, said second means for connecting being operated in response to said CPU means to connect said corresponding measuring unit to said output port for transmitting messages between said computer control unit and said measuring unit;

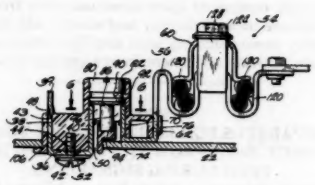
test access means connected to said corresponding measuring unit and to said CPU means, said test access means being operated in response to said CPU means to provide a path from said corresponding measuring unit to a selected one of said plurality of subscribers for testing said subscriber's outside plant and line facilities.

4,552,998

APPARATUS FOR ALTERNATIVELY AND SELECTIVELY CONNECTING TELEPHONE CABLE SHIELD GROUND STRAPS TO A GROUND ROD AND INCLUDING A GROUND BRACKET

Hans J. Ziegler, 4828 N. Newhall St., Milwaukee, Wis. 53217

Filed May 16, 1983, Ser. No. 494,977
Int. Cl.[4] H01H *21/00*
U.S. Cl. 200—11 R **34 Claims**



1. Apparatus adapted to be supported by a support structure and for use in selectively connecting an electrically conductive shield of a cable to an eelctrical ground to ground the electrically conductive shield, and for selectively providing for disconnection of the electrically conductive cable shield from the electrical ground to facilitate testing of the electrical continuity of the electrically conductive cable shield, the apparatus comprising:

a ground disconnect block body comprised of electrically insulative material, the ground disconnect block body being adapted to be supported by the support structure,

a first contact member supported by said ground disconnect block body, a first portion of said first contact member being housed in said ground disconnect block body, a second portion of said first contact member projecting from a first portion of said ground disconnect block body and comprising an electrically conductive test member, and a third portion of said first contact member projecting from a second portion of said ground disconnect block body and for connection to an electrically conductive shield of a first cable.

a second contact member supported by said ground disconnect block body, a first portion of said second contact member being housed in said ground disconnect block body and being spaced from said first portion first contact member, and a second portion of said second contact member projecting from said ground disconnect block body and being adapted to be connected to said electrical ground.

an electrically conductive member supported by said ground disconnect block body and positioned between said first

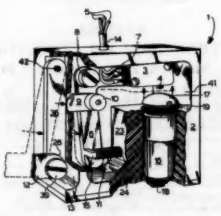
portion of said first contact member and said first portion of said second contact member, said electrically conductive member being shiftable between a first position wherein a first portion of said electrically conductive member engages said first portion of said first contact member and a second portion of said electrically conductive member engages said first portion of said second contact member and wherein said electrically conductive member provides an electrical connection between said first contact member and said second contact member, and a second position wherein said first portion of said electrically conductive member is spaced from said first contact member and said second portion is spaced from said second contact member.

4,552,999

TIME DELAY SWITCH

Dulin L. Annas, Hickory, N.C., assignor to Anteg, Inc., Hickory, N.C.

Filed Jul. 23, 1984, Ser. No. 633,358
Int. Cl.[4] H01H *43/00*
U.S. Cl. 200—34 **16 Claims**



1. A time delay switch comprising a housing containing actuating means, a biasing means, a switch means and a pneumatic means wherein:

(a) a part of the actuating means is disposed outside and a part inside of the housing and is movable from a first to a second position by the part located outside of the housing;

(b) the biasing means is attached to that part of the actuating means located inside of the housing and to the housing to bias the actuating means towards the first position;

(c) the switch means is in a first state when in contact with the penumatic means and a second state when not in contact with the pneumatic means; and,

(d) the penumatic means is aligned with the switch means adapted to be in compressed, intermediate and expanded states and when in its compressed and expanded states it is in contact with the switch means and when in its intermediate state it is not in contact with the switch means.

4,553,000

PLUG AND RECEPTACLE WITH SEPARABLE SWITCH CONTACTORS

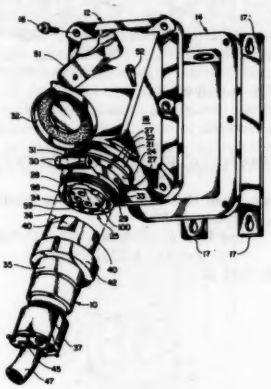
Arthur I. Appleton, Miami Beach, Fla., assignor to Appleton Electric Company, Chicago, Ill.

Filed Nov. 14, 1983, Ser. No. 551,285
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 B **14 Claims**

1. An electrical connector including a plug and receptacle for connecting an electrical load to a power source, said plug including a housing having a front end and a rear end with a plurality of terminals proximate its front end, said receptacle including a housing having a plug receiving end with means therein for receiving said plug terminals, said receptacle also including receptacle terminals, the improvement comprising:

said plug terminals, during and after full insertion into the receptacle, being spaced from said receptacle terminals so as to avoid resistance to insertion thereby;

and multiple function actuator means forming a part of one of said plug and receptacle which is moveable from a first position to a second position, but only when said plug terminals are fully inserted into the receptacle, for indirectly connecting said plug terminals and receptacle terminals electrically after the plug is fully inserted into the receptacle.

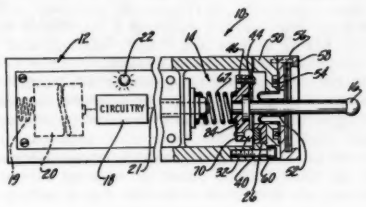


4,553,001

TOUCH PROBE HAVING NONCONDUCTIVE CONTACT CARRIERS

Charles F. Kroetsch, Warren, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Division of Ser. No. 557,754, Dec. 5, 1983, Pat. No. 4,523,063.
This application Apr. 26, 1985, Ser. No. 727,837
Int. Cl.[4] H01H *3/00*; **G01B** *5/00*
U.S. Cl. 200—61.41 **6 Claims**



1. In a battery operated probe having a movable stylus for contacting an object, with the probe including circuit means therein for generating an electrical signal which is transmitted from the probe when the stylus contacts the object, the improvement comprising:

an electrically conductive probe housing, with one end of the battery being connected to the probe housing and another end of the battery being connected to said circuit means;

a first carrier member transversely connected to the stylus and having a first set of electrically conductive contacts affixed thereto;

a second carrier member in the form of a nonconductive plastic insert supported on a fixed conductive member extending transversely to the stylus, said second carrier member having a second set of electrically conductive contacts thereon opposing said first set of contacts;

first means for connecting said first and second set of contacts together in a series circuit whereby movement of

the stylus results in a change of electrical characteristics between the two sets of contacts;

second means for connecting said circuit means to at least one of the contacts of the first set;

third means passing through said plastic insert for electrically connecting at least one contact of the second set with said fixed conductive member; and

fourth means for electrically connecting said fixed conductive member to the probe housing thereby completing the electrical circuit back to said battery.

4,553,002

AXIAL MAGNETIC FIELD VACUUM-TYPE CIRCUIT INTERRUPTER

Paul G. Slade, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1983, Ser. No. 557,793
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **6 Claims**

1. A vacuum-type circuit interrupter, comprising:

an evacuated housing;

a pair of opposed contacts at least one of which is movable with respect to the other and is movable between a closed position in engagement with the other contact to an open position spaced apart from the other contact to form an arcing gap therebetween wherein an arc can form during circuit interruption, the contact pair positioned within the housing, each contact including a disc-shaped backing plate having at least two radially spiraling slots therethrough with the slots having a similar direction of spiraling, the backing plates being substantially parallel to one another with direction of the spiraling slots therethrough being reversed with respect to those of opposing contact; and

a contact and arcing ring secured to the opposed face of each of the spiral backing plates for ensuring current flow through the spiral arms of the disc shaped backing.

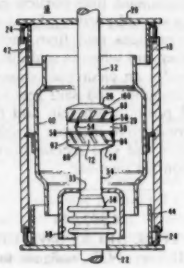
4,553,003

CUP TYPE VACUUM INTERRUPTER CONTACT

Sidney J. Cherry, Elmira, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1984, Ser. No. 595,071
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **10 Claims**

1. A vacuum type circuit interrupter comprising, a pair of relatively movable contacts, said contacts being relatively movable between a closed position in engagement and an open position, when in the open position said contacts form an arcing gap therebetween across which an arc can form during circuit interruption; an evacuated housing disposed about and enclosing said pair of contacts; at least one of said contacts comprising a cupshaped holder portion and a contacting portion, said cup-shaped holder portion comprising a flat, round base and a circular side wall, said side wall being disposed perpendicular from the periphery of said flat base portion, at least said side wall having slots formed therein, said side wall extending from said base portion to a rim, said cup-shaped holder consisting of a precipitation-hardened copper alloy, said contacting portion of said contact being disposed on and affixed to said rim of said side wall, said contacting portion being approximately the same shape and cross-sectional area as said rim, said contacting portion being comprised of a copper alloy.

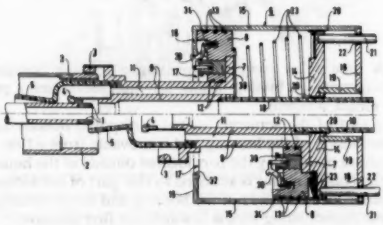


4,553,004

PUFFER-TYPE GAS-BLAST CIRCUIT-BREAKER

Edmond Thuries, Meyzieu, France, assignor to Alsthom-Atlantique, Paris, France

Filed Mar. 12, 1984, Ser. No. 588,174
Claims priority, application France, Mar. 11, 1983, 83 04040
Int. Cl.[4] H01H *33/88*
U.S. Cl. 200—148 A **10 Claims**



1. In a puffer-type gas-blast circuit-breaker including an interrupter comprising; a gas-blast arc-extinguishing mechanism having a fixed cylinder (6) with a top (16) and bottom (14) joined by a cylindrical end wall, fixed main contact fingers (2) and arcing contact fingers (1), movable main contact fingers (3) and arcing contact fingers (4), a mechanism of said gas-blast arc-extinguishing assembly for moving said movable main contact fingers (3) and arcing contact fingers (4) relative to said fixed main contact fingers (2) and arcing contact fingers (1), the improvement wherein the gas-blast assembly includes two concentric pistons (7, 8) mounted within the cylinder (6) for axial movement therein between said top and bottom and including a first piston (7) driven by the mechanism and serving to move the moving contacts (3, 4); and a second free piston (8), said pistons (7, 8) and said cylinder (6) delimiting a volume of blast-gas in a current loop used by the opening current which passes via the arcing contacts (2, 4), said opening current passing therethrough in the same radial direction as it passes through the bottom (14) of the cylinder; resilient return means (23) placed inside the cylinder (6) between the bottom (14) and the second piston (8) to urge said second piston (8) against the top (16) of the cylinder in such a manner as to maximize the volume of the blast-gas; and coupling means (30) for locking the second piston (8) to the top (16) when it reaches the top (16) of the cylinder under the action of the resilient return means 923) and means responsive to movement

of said first piston (7) when it leaves the vicinity of the top (16) of the cylinder for releasing said coupling means (3) at opening of the interrupter.

4,553,005

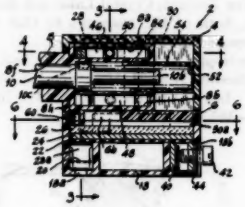
TRIGGER OPERATED ELECTRIC SWITCH

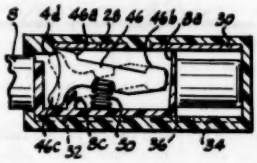
Robert L. Glenn, Arab, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1984, Ser. No. 587,728

Int. Cl.⁴ H01H *13/08, 9/06*

U.S. Cl. 200—153 LA **29 Claims**





1. A trigger operated electric switch comprising, in combination:

an insulating housing;

an actuator mounted for linear reciprocal movement in said housing and having a trigger operator extending outwardly of said housing;

means biasing said actuator to an extended position of said trigger with respect to said housing;

stationary contacts mounted against internal surfaces of opposite sidewalls of said housing, said stationary contacts being linearly spaced apart in the direction of said linear reciprocal movement of said actuator;

a pair of contactors carried by said actuator for linear movement therewith, said contactors being disposed at opposite sides of said actuator adjacent respective ones of said internal surfaces and being movable in opposite laterally outward directions with respect to said actuator; and

means on said housing engagable with said contactors and responsive to depression of said trigger operator for moving said contactors laterally outward of said actuator in opposite directions into bridging engagement with said stationary contacts.

4,553,006

KEY OPERATED SECURITY SWITCH TO PREVENT UNAUTHORIZED USE OF EQUIPMENT

Philip V. Little, Keighley, England, assignor to Lucas Industries, Birmingham, England

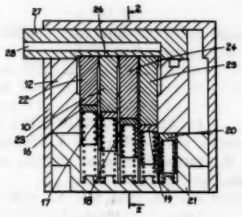
Filed Mar. 21, 1984, Ser. No. 591,685

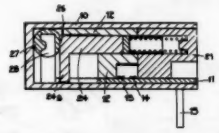
Claims priority, application United Kingdom, Mar. 25, 1983, 8308296

Int. Cl.⁴ H01H *27/08*

U.S. Cl. 200—43.05 **3 Claims**

1. A security switch comprising a housing, a plurality of fixed contacts in said housing, a slider mounted in the housing for slidable non-rotary movement therein, a plurality of contacts on said slider movable with the slider relative to said fixed contacts, a plurality of locking pins transversely mounted in said housing and each movable in a direction transverse to the direction in which the slider can slide relative to the housing, a plurality of plungers mounted in the slider and each having an adjacent and a remote end, said plungers being respectively engageable at the adjacent end with a locking pin, at least some of said plungers being of different lengths, a plurality of resilient members respectively urging said locking pins towards an operative, locking position in which at least some of said locking pins extend partly into the slider to prevent sliding movement thereof, a barrel disposed in said housing so as to be axially and angularly movable therein, said barrel having a key slot extending through a wall of the barrel





and adapted to receive a key having an edge which is of stepped configuration and which, when the key is inserted into the key slot of the barrel will project through the barrel wall, said key slot then being in a position in which said stepped edge of the key does not engage the remote ends of the plungers as the key is inserted into the barrel, whereas upon subsequent turning of the key and the barrel, said stepped edge will engage at least some of said remote ends of the plungers and cause movement of said plungers to push the locking pins into an inoperative unlocked position in which they do not extend into the slider and in which the plungers do not extend outwardly of the slider so as to permit sliding movement thereof, such sliding movement of the slider then being effected by axially moving the key and the barrel.

4,553,007

ARC RESISTANT VAPOR CONDENSING SHIELD FOR VACUUM-TYPE CIRCUIT INTERRUPTER

Paul O. Wayland, Montour Falls, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1983, Ser. No. 537,997

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B **6 Claims**

1. A vacuum-type circuit interrupter including in combination:

(a) means defining an evacuated envelope;

(b) a pair of two-component metallic electrical contacts disposed within the evacuated envelope, said contacts being separable to establish arcing;

(c) a vapor condensing shield disposed within said evacuated envelope to prevent the deposition of metal particles, emitting from the arcing region, on the envelope and to prevent heat flux from damaging the envelope; and

(d) at least that portion of the vapor condensing shield adjacent to said separable contacts and within the arcing area

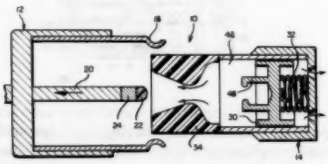
being comprised of the same two metallic components as the separable electrical contacts.

4,553,008

LOAD INTERRUPTER

Edward F. Veverka, Franksville; Nils V. Holmgren, Greendale, and Donald R. Martin, Racine, all of Wis., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 14, 1984, Ser. No. 620,515
Int. Cl.[4] H01H *33/82*
U.S. Cl. 200—148 R **14 Claims**



1. A load interrupter, comprising:

(a) a generally cylindrical hollow casing having two ends, an interrupting end and an oppositely disposed vented end;

(b) a moving contact which is adapted to move relative to said casing and towards and away from the interior of said casing, said moving contact defining a free end and a fixed end, said free end being formed from an electrically insulating material with the remainder of said moving contact being formed from electrically conducting material;

(c) a piston which is sealingly disposed within said casing and which is free to move between said interrupting end and said vented end, said piston dividing the interior of said casing into two chambers, an interrupting chamber and a venting chamber;

(d) contacting means, carried by said piston, for electrically making contact with the free end of said moving contact and for transferring electrical current from said piston to said casing;

(e) biasing means, carried by one of said casing and said piston, for biasing said piston towards the interrupting end of said casing;

(f) flow control means, carried at the interrupting end of said casing, for directing the flow of fluid into and out of said interrupting chamber, said flow control means defining a throat formed from an electrically insulating material which is adapted to receive said free end of said moving contact, said moving contact when passed from the exterior of said casing and through said throat of said flow control means being of sufficient axial length so as to engage said contacting means and overcome said biasing means to position said piston intermediate said interrupting end and said vented end of said casing, the axial separation between said throat and the position of said piston when said piston is at the interrupting end of said housing being such that said contacting means is disengaged from said moving contact before the non-conducting tip of said moving contact is within said throat,

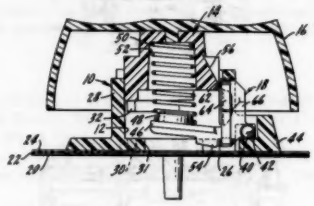
whereby the electrical arc formed by separating said moving contact from said contact means is drawn between the exterior conducting portion of said moving contact and said throat such the flow of fluid out of said interrupting chamber is discharged around the periphery of said moving contact and in direct contact with said arc.

4,553,009

KEYBOARD SWITCH WITH PIVOTAL ACTUATOR LEVER

Anthony J. Van Zeeland, Crystal Lake, and Ronald S. Denley, Woodstock, both of Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Continuation-in-part of Ser. No. 414,629, Sep. 3, 1982,. This application Nov. 21, 1983, Ser. No. 553,966
Int. Cl.[4] H01H *5/08;* **B41J** *5/26*
U.S. Cl. 200—340 **11 Claims**



1. A low profile keyboard switch having tactile feel for use in combination with a membrane switch array, including a housing adapted to be positioned on a membrane switch array, an upright opening in said housing, a plunger reciprocal in said housing, an actuator lever pivotally mounted on said housing and positioned for engagement by said plunger, spring means seated upon said lever and urging said plunger outwardly in said opening, cooperating cam surfaces on said plunger and lever preventing movement of said lever to a membrane switch closing position until said plunger has moved inwardly a given distance, inward movement of said plunger compressing said spring means with movement of said plunger beyond the given distance causing the sudden application of a switch closing force, from said compressed spring means, by said lever on the underlying switch array.

4,553,010

PACKAGING CONTAINER FOR MICROWAVE POPCORN POPPING AND METHOD FOR USING

Timothy H. Bohrer; Thomas D. Pawlowski, both of Neenah, and Richard K. Brown, Appleton, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Filed Jul. 5, 1983, Ser. No. 510,735
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **17 Claims**

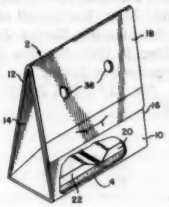
1. An expansible package for shipping and microwave popping of popcorn, comprising:

(a) a predetermined quantity of popcorn kernels which will occupy a predictable volume when popped;

(b) an expansible package containing said predetermined quantity of popcorn constructed for expansion from a collapsed condition having a compact configuration for shipping to an expanded configuration having a predetermined internal volume at least equal to said predictable volume occupied by said popcorn kernels when popped, said expansible package having a wall adapted to rest in a generally flat horizontal configuration upon a horizontal support surface in a microwave oven, said flat wall having an interior surface that is large enough for said predeter-

mined quantity of unpopped popcorn to be spread thereon in a generally unclumped and scattered manner with each kernel being generally spaced an average kernel's diameter away from said interior surface or less when said predetermined quantity of kernels is evenly spread over said interior surface; and

(c) a microwave converting means integrally connected with said expansible package for converting microwave energy into heat for transfer in a sufficient amount to the popcorn kernels when scattered and unclumped to reduce substantially the number of burned or unpopped kernels



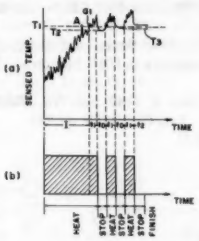
that could result if the kernels were popped solely by direct impingement of microwave energy, said microwave converting means including a microwave interactive material whose temperature increases in response to impinging microwaves, said microwave interactive material being connected with said flat wall and co-extensive with an area of said interior surface which is sufficiently large to permit said predetermined quantity of popcorn to be spread in said unclumped and scattered manner to cause each kernel to be generally spaced an average kernel's diameter away or less from said microwave interactive material.

4,553,011

TEMPERATURE CONTROL FOR MICROWAVE OVEN

Takeshi Nakata; Atsushi Horinouchi, and Kazuo Taino, all of Otsu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 31, 1984, Ser. No. 687,698
Claims priority, application Japan, Dec. 29, 1983, 58-249517
Int. Cl.[4] H05B *6/68*
U.S. Cl. 219—10.55 B **5 Claims**



1. A microwave oven which comprises microwave oscillating means for oscillating the microwave for heating food, temperature sensing means for sensing the temperature of the food to be heated, control means for controlling the oscillation of the oscillating means and instruction means for instructing activation of the oscillating means, said control means including

(a) input detecting means for detecting the instruction fed from the instruction means,

(b) means for activating said oscillating means in response to the instructions fed from the instruction means,

(c) first detecting means for detecting whether the output value of the sensing means exceed a first value continuously during a first predetermined period,

(d) first means for deactivating said oscillating means corresponding to the detection of the first detecting means,

(e) second detecting means for detecting whether the output value of the sensing means exceed a second value continuously during a predetermined second period while said oscillation means is stopped, and

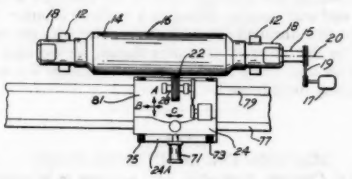
(f) means for enabling said input detecting means in response to the output of the second detecting means.

4,553,012

ELECTRICAL DISCHARGE SURFACE CONDITIONING DEVICE

Alex L. Anderson, 3714 Fairway Pl., Rockford, Ill. 61107

Filed Apr. 18, 1984, Ser. No. 601,719
Int. Cl.[4] B23P *1/08, 1/12, 1/20*
U.S. Cl. 219—69 R **8 Claims**



1. Apparatus for electric discharge machining the surface of a workpiece wherein the workpiece is mounted for rotation about a longitudinal axis for cooperation with an electrode that moves over the surface and including means for directing a dielectric fluid flow in the gap between the electrode and workpiece, said electrode providing an electric discharge therefrom to the workpiece surface to alter the surface condition into a desired form, said apparatus comprising:

an electrode including a plurality of alternating generally cylindrical discs of conductive and non-conductive material arranged in a composite stack to form a cylinder defining a face, said cylinder having an axis;

means for mounting the electrode for rotation about the axis of the cylinder, said means for mounting also including means for aligning the axis of the cylinder parallel to the workpiece axis so as to maintain the cylinder face generally parallel to an incremental workpiece surface;

means for maintaining a defined gap between the electrode and the workpiece surface, said gap being located on a line generally perpendicular to the axes and connecting the axes;

means for providing electric current for discharge to the conductive discs and for controlling the current to said discs;

means for rotating the composite stack electrode; and

means for moving the composite stack of discs transversely along the axis of the workpiece.

4,553,013

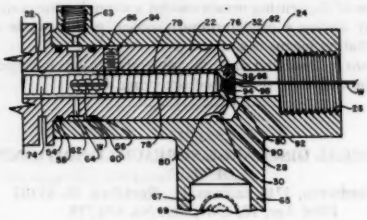
GAS SEAL FOR MIG GUN SYSTEMS

William H. Colman, Cape Girardeau County, Mo., assignor to Lenco, Inc., Jackson, Mo.

Filed Aug. 8, 1984, Ser. No. 639,003
Int. Cl.[4] B23K *9/16*
U.S. Cl. 219—74 **17 Claims**

1. Means to prevent the escape of gas from the inlet end of a wire feed connector assembly through which welding wire passes from a wire feed unit to a welding location comprising an inlet connector assembly having a bore with an inlet end

adapted to communicate with a supply of welding wire, means positioned in said bore through which the welding wire passes from the feed unit including an elongated tubular member having inlet and outlet ends and sized to extend into the inlet end of said bore, said tubular member having an upstream end defined by an inwardly extending flange having an opening therethrough sized to receive and guide welding wire as it



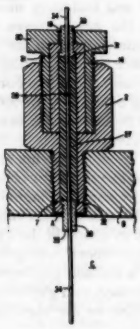
passes therethrough, and a seal member mounted on the tubular member on the upstream side of the inwardly extending flange, said seal member including a resilient member having an orifice therethrough positioned to register with the opening defined by the inwardly extending flange, the opening in the resilient member being sized to resiliently engage the welding wire passing therethrough.

4,553,014

SELF-SEALING ELECTRODE GUIDE

Thomas F. Culbreth, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,611
Int. Cl.[4] B23K *9/28;* **H01B** *17/30;* **F16J** *15/48*
U.S. Cl. 219—75 **5 Claims**



1. Welding apparatus comprising:

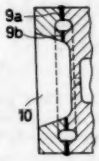
a welding chamber having an electrode port, a generally constant diameter electrode, and a self-sealing electrode guide for supporting said electrode in said electrode port of said welding chamber, said electrode guide including a housing adapted to be mounted in the electrode port, said housing including housing walls defining a housing channel; a sealing sleeve accommodated in said housing channel; said sealing sleeve having opposite first and second ends and a passage extending within said sealing sleeve and being open at said first and second ends; said passage being adapted to receive the electrode; said first end being disposed for exposure to an external force oriented in a direction extending from said first end towards said second end; said force being derived from a pressure in the welding chamber; and abutting means held in said housing and cooperating with said second end for preventing displacement of said sealing sleeve in said direction relative to said housing; said sealing sleeve being resiliently deformable by said external force for assuming a deformed state in which said sealing sleeve is sealingly pressed about the electrode and against said housing walls; and said electrode and said passage of said sealing sleeve having diametral dimensions such that said electrode is axially displaceable with respect to said sealing sleeve in the absence of said external force.

4,553,015

METHOD OF FABRICATING PISTON BY WELDING

Masami Ishii, Toyota; Fuminao Arai, Chiryu; Noriaki Hattori, Toyota, and Junichi Mita, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 9, 1983, Ser. No. 559,925
Claims priority, application Japan, Dec. 26, 1982, 57-232688
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 ED **4 Claims**



1. A method of fabricating a piston having an exterior portion by welding, the method comprising the steps of:

fabricating the head section and the skirt section of the piston separately such that said sections form the top wall portion of the piston when joined together and the abutting surfaces of these sections form a portion of an oil circulating passage;

causing the abutting surfaces of the head section and the skirt section to abut each other to form the oil circulating passage; and

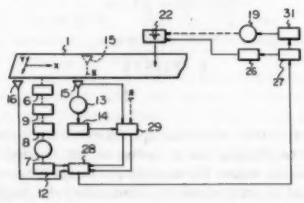
welding together the abutting surfaces by using an electron beam such that inner end portions of the weld seams are exposed to said exterior portion of said piston.

4,553,016

ELONGATED NON-METALLIC SHEET HAVING A METAL EMBEDDED THEREIN OR ATTACHED THEREON

Hiroyuki Kunii; Hirohisa Sente, and Kouji Hironaka, all of Icihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Jun. 9, 1982, Ser. No. 386,616
Int. Cl.[4] B23K *27/00*
U.S. Cl. 219—121 LG **3 Claims**



1. A method of trimming an elongated nonmetallic sheet having a metal portion in intimate contact therewith over the entire length thereof, comprising the steps of:

applying a cutting device for cutting the sheet, said cutting

device being stationary in the longitudinal direction of the sheet;

transferring the sheet in the longitudinal direction along a predetermined straight transfer passage;

profiling the periphery of each of the longitudinal sides of the metal portion gradually while the sheet is being transferred along said transfer passage and obtaining a first information signal indicative of a position a predetermined lateral distance from the periphery of the profile, said metal portion being a wire arranged in a reversing path and having turning ends on each longitudinal side of said sheet, said first information signal being obtained by detecting the positions of at least three consecutive turning ends on at least one side of said sheet, generating a profile signal indicative of the positions of each of said turning ends, synthesizing the three signals to produce a signal component representing a part of a line parallel to said periphery of the profile and a predetermined distance outwardly from the periphery of the profile, generating a profile signal of a fourth turning end and synthesizing the signals indicative of the position of the fourth turning end and the positions of the two previous turning ends to produce a signal component representing a subsequent part of said line; and

detecting the longitudinal moving distance of the sheet and obtaining a second information signal indicative of the distance of movement of the sheet; and

controlling the lateral movement of said cutting device in response to said first and second information signals so that the sheet is cut continuously on each of the longitudinal sides of the sheet along a line parallel to and a predetermined distance from the periphery of the outline of the corresponding turning ends of the metal.

4,553,017

ENERGY BEAM FOCUSING APPARATUS AND METHOD

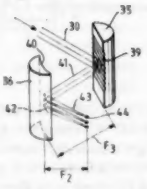
Robert L. Addleman, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 29, 1983, Ser. No. 490,115

Claims priority, application United Kingdom, Mar. 14, 1983, 8306951

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LA **10 Claims**



1. An apparatus for increasing the power density of an energy beam said apparatus comprising first means for focusing the beam to an anisometric configuration and second means for focusing the anisometric beam to a modified, preferably substantially isometric, configuration.

4,553,018

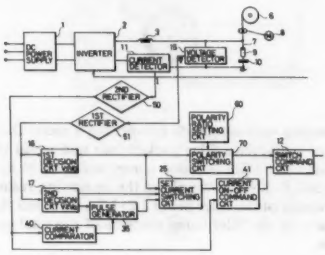
SHORT CIRCUITING TRANSFER ARC WELDING MACHINE

Masatsune Kondo, Aichi; Youichiro Tabata; Shigeo Ueguri, both of Hyogo; Takaji Mizuno; Hirohisa Segawa, both of Aichi, and Seigo Hiramoto, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Oct. 27, 1983, Ser. No. 545,977

Int. Cl.⁴ B23K *9/09*

U.S. Cl. 219—130.51 **20 Claims**



1. A short circuiting arc welding machine comprising:

(a) a wire feed motor for feeding a wire electrode toward a workpiece;

(b) a DC power supply circuit for supplying a welding current between the wire electrode and the workpiece;

(c) an inverter for controlling said welding current;

(d) a voltage detector for detecting a voltage between the wire electrode and the workpiece;

(e) a current detector for detecting the welding current; and

(f) a current control device for controlling said inverter in response to detected values from said voltage detector and said current detector, said current control device comprising:

(1) a first decision circuit for issuing a signal when said detected voltage is smaller than a first reference voltage;

(2) a second decision circuit for issuing a signal when said detected voltage is larger than a second reference voltage which is higher than said first reference voltage;

(3) a current comparator for issuing a signal when said detected current is smaller than a predetermined current;

(4) a pulse generator for issuing a pulse signal in response to the outputs from said second decision circuit and said current comparator;

(5) a set current switching circuit for selecting and issuing one of a plurality of set current values in response to the outputs from said first decision circuit, said second decision circuit, and said pulse generator;

(6) a current on-off command circuit for issuing a current on-off command through comparison between the output from said set current switching circuit and the detected current; and

(7) a switch command circuit responsive to the on-off command from said current on-off command circuit for issuing a signal to control conduction of said inverter.

4,553,019

GOUGING WIRE ELECTRODE

Masanori Maeda, Higashiosaka; Koji Ishihara, Hirakata, and Tetsuo Ikebata, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP83/00258, § 371 Date Apr. 6, 1984, § 102(e) Date Apr. 6, 1984, PCT Pub. No. WO84/00724, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 10, 1983, Ser. No. 599,438

Claims priority, application Japan, Aug. 12, 1982, 57-140604

Int. Cl.⁴ B23K *35/368*

U.S. Cl. 219—146.22 **1 Claim**

1. A gouging wire electrode comprising a metal shell, and a powdery or particulate filler packed into said metal shell, the composition of said filler section comprises 80–95% by weight of carbon and 5–20% by weight of thermosetting resin binder, the bulk density of the filler being 1.2–1.7 g/cm^3 and the cross-sectional area of the filler being 60–90% of the total cross-sectional area.

4,553,020

ELECTRONIC COMPONENT PACKAGE COMPRISING A MOISTURE-RETENTION ELEMENT

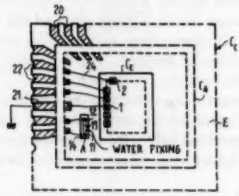
Christian Val, St. Remy-les-Chevreuses, France, assignor to Compagnie d'Informatique Militaire, Spatiale et Aeronautique, Paris, France

Filed Dec. 23, 1983, Ser. No. 565,042

Claims priority, application France, Dec. 28, 1982, 82 21871

Int. Cl.⁴ H01L *23/26;* **H05B** *1/00*

U.S. Cl. 219—209 **12 Claims**



1. A package for an electronic component, comprising a base for receiving said component and a cover placed over said component and fixed on said base in an air-tight manner, a retaining element which chemically reacts with and retains water molecules, positioned within said package, and also located inside said package, means for heating said element after said tight fixing of said cover.

4,553,021

PINCER-GUN FOR ELECTRICALLY HEATING METAL HINGES OF THERMOPLASTIC EYEGLASS FRAMES

Gianfranco Conti, Viale Corsica, 39 Milano, Italy

Filed Nov. 8, 1982, Ser. No. 440,025

Claims priority, application Italy, May 10, 1982, 21165 A/82

Int. Cl.⁴ B23K *9/28, 3/04;* **H05B** *3/02*

U.S. Cl. 219—234 **13 Claims**

1. A manually operated pincer-gun utilizing an electric current source for heating metal hinges of thermoplastic eyeglass frames, comprising:

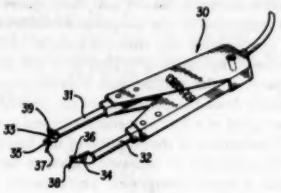
two hand grips of electrical insulating material and movable toward and away from each other;

two arms each rigidly connected with a respective hand grip and having an extremity, each of said extremities being electrically conductive;

two picking-up tips of electrically conductive material and each provided on the extremity of a respective arm

two heating tips of electrically conductive material and each also provided on the extremity of a respective arm, said picking-up tips and said heating tips being arranged at different locations on said respective extremities and being spaced from one another and electrically connected to the respective extremities;

means for connecting said extremities and thereby said picking-up tips and said heating to an electric current source; and



pivot means for connecting said hand grips to each other such that said hand grips together with the respective arms and their extremities are movable toward each other to enable said picking-up tips to engage one portion of a hinge to apply electric heating current thereto and enable said heating tips to contact another portion of the hinge to apply electric heating current thereto to heat the hinge and to soften an eyeglass frame around the hinge for insertion or extraction of the hinge, said two picking-up tips being formed as opposing tapered heads to be able to easily penetrate into eyeholes of the hinge, said two heating tips being formed as pins extended substantially parallel to each other to be able to be placed on bases of the hinges to be extracted.

4,553,022

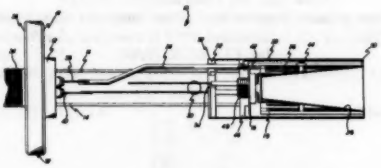
EFFUSION CELL ASSEMBLY

Paul Colombo, New Brighton, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 4, 1984, Ser. No. 616,743

Int. Cl.⁴ C23C *13/12*

U.S. Cl. 219—275 **2 Claims**



1. An ultra-high vacuum effusion cell for operating at a temperature of about 1500° C. comprising, in combination:

a self supporting high emissivity heater filament having a serpentine path which is formed in a generally cylindrical configuration, said filament providing a substantially uniform radiation therefrom when electrical current passes therethrough;

a support ridge projecting inwardly of said heater filament and forming a support ring; and

a crucible supported by said support ring and disposed radially inward of said heater filament to hold a material to be heated.

4,553,023

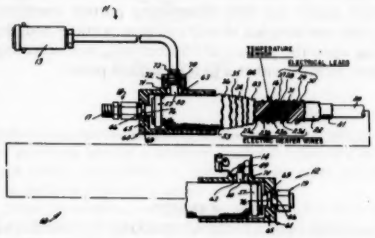
THERMALLY INSULATED ELECTRICALLY HEATED HOSE FOR TRANSMITTING HOT LIQUIDS

Calvin R. Jameson, Atlanta, and Robert G. Baker, Buford, both of Ga., assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 325,389, Nov. 27, 1981, Pat. No. 4,455,474. This application Jan. 11, 1984, Ser. No. 569,976

Int. Cl.[4] H05B *3/58;* F16L *11/12, 53/00;* B67D *5/62*

U.S. Cl. 219—301 6 Claims



1. A flexible heated hose of substantially uniform construction throughout its length for transmitting hot liquid material comprising:

a flexible polymeric tube contained within a braided stainless steel covering, said tube having metallic hydraulic fittings sealingly attached to opposite ends,

a first layer of woven fiberglass helically wound around said braided stainless steel covering, said first layer being coated on its opposite sides with a thermosetting adhesive,

at least one electrical heating line helically wound around and adhesively secured to said first layer of woven fiberglass, by said adhesive coating on said first layer,

electrical leads connected to said at least one electrical heating line for supplying electrical power thereto,

temperature detecting means adhesively secured to said first layer of woven fiberglass by the adhesive coating on said first layer, and electrical leads helically wrapped around said first layer of woven fiberglass and extending from said temperature detecting means to one end of said hose,

a second layer of woven fiberglass helically wound over said at least one electrical heating line, said temperature detecting means, and said temperature detecting means leads, said second layer of woven fiberglass being coated on the inside surface with a thermosetting adhesive so as to secure said at least one electrical heating line, temperature detecting means and temperature detecting means leads against movement relative to said tube,

a third layer of thermal-insulative material helically wound over said second layer, said third layer acting as a thermal barrier to heat loss from said hose,

a fourth layer of at least one thickness of polyester felt helically wrapped over said third layer,

a fifth layer of vinyl electrical tape helically wrapped over said fourth layer, said fifth layer providing a moisture barrier for said hose,

at least two electrical leads operative to transmit electrical power for the length of the hose helically wrapped along said tube internally of said fifth layer and

a braided polyester cover over said fifth layer

4,553,024

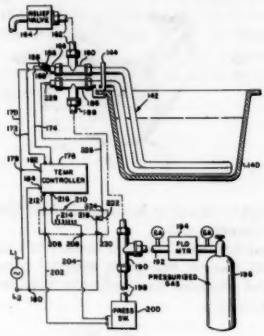
GAS-PURGED FLEXIBLE CABLE-TYPE IMMERSION HEATER AND METHOD FOR HEATING HIGHLY CORROSIVE LIQUIDS

Gordon R. Findlay, Northfield, Ohio, assignor to Lufran, Inc., Macedonia, Ohio

Filed Apr. 7, 1983, Ser. No. 482,909

Int. Cl.[4] H05B *1/02, 3/78;* F24H *1/20*

U.S. Cl. 219—335 2 Claims



2. An immersion heating apparatus for heating in highly corrosive liquid baths comprising:

(a) a flexible cable-type immersion heater for immersion in a corrosive bath, said heater having a wall sufficiently thin to be subject to permeation of the vapors of highly corrosive liquids; said heater including

(i) a continuous coiled element of electrically resistive material disposed in axially closed spaced pitches and operative upon connection to a source of power to provide heat;

(ii) a continuous tubular outer jacket, said jacket formed of flexible plastic material received over said coiled element in closely fitting relationship and resistant to chemical attack by acidic and alkaline solutions, said tubular jacket having the wall thickness thereof sufficiently thin to provide heat transfer from said heater to the corrosive bath, said tubular jacket wall being sufficiently thin so as to be subjected to permeation of the corrosive vapors through said jacket to said coiled element;

(b) means operative to provide a source of dry gaseous medium under controlled fluid pressure;

(c) means isolating the ends of said tubular jacket from the corrosive liquid bath;

(d) means operative to direct a continuous flow of said dry gaseous medium into one end of said jacket and surrounding said coiled element to said opposite end at said controlled pressure for purging the corrosive vapors.

4,553,025

INSULATED ELECTRIC HEATING ELEMENT

Herman E. Raskov, 6312 Seward Park Ave. S., Seattle, Wash. 98118

Continuation-in-part of Ser. No. 401,640, Jul. 26, 1982, Pat. No. 4,480,176. This application Oct. 3, 1984, Ser. No. 657,345

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

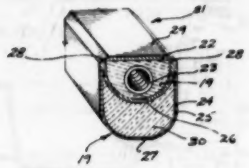
Int. Cl.[4] H05B *3/68*

U.S. Cl. 219—461 2 Claims

1. An insulated, electric heating element suitable for use in an electric heating system designed to emit heat in a predetermined direction comprising:

(a) a heating element housing having an upper chamber and lower chamber, the cross-sectional configuration of the

upper chamber including a flat top, the top having opposing longitudinal edges and a generally U-shaped bottom, the cross-sectional configuration of the lower chamber including a generally U-shaped bottom, the legs of the lower chamber bottom unitarily joining the longitudinal edges of the top of the upper chamber, the cross-sectional shape of the top of the lower chamber being defined by the bottom of the upper chamber;



(b) an electric resistive heating element mounted in said upper chamber; and

(c) thermal insulation material housed in said lower chamber, said thermal insulation material preventing downward and sideward heat radiation from said heating element housing.

4,553,026

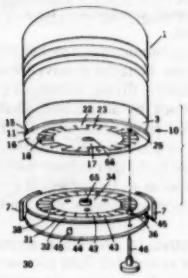
CAPACITIVE LABEL READER

H. Duane Arlowe, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 15, 1983, Ser. No. 514,126

Int. Cl.[4] G06K *7/08*

U.S. Cl. 235—451 **9 Claims**



1. A monitoring system for monitoring the identity of a container at a storage location, said system comprising:

a capacitive label reader for mounting near a storage location, said reader comprising an insulated board having a conductive surface including a first transmitting portion, a second transmission portion spaced from and electrically insulated from said first portion, a plurality of receiving portions, each of said receiving portions extending between said first and second transmitting portions and each receiving portion being electrically insulated from each adjacent receiving portion and from said transmitting portions; pulse means for simultaneously transmitting a first electrical pulse having a first distinct characteristic to said first transmitting portion and a second electrical pulse having a second distinct characteristic to said second transmitting portion; and receiving means connected to said receiving portions for identifying the characteristics of pulses received by said receiving portions;

a capacitive identifying label for mounting on a container, said label comprising an insulated board having a conducting surface forming essentially a mirror-image of said reader conductive surface, said label surface including a first coupling portion corresponding in size and shape to the first transmitting portion of said reader, a second coupling portion electrically insulated from said first coupling portion and corresponding in size and shape to said second transmitting portion, and a plurality of identifying portions, each indentifying portion corresponding in size and shape to a receiving portion of said reader, and each portion being electrically insulated from each adjacent portion and from only one of said coupling portions, whereby the pattern of connections between said identifying portions and said coupling portions defines a unique code for the label; whereby when said label is aligned with said reader and said transmitting portion energized, the pulses are coupled to said coupling portions and, depending upon the pattern of connections, each receiving portion receives either a first or second pulse.

4,553,027

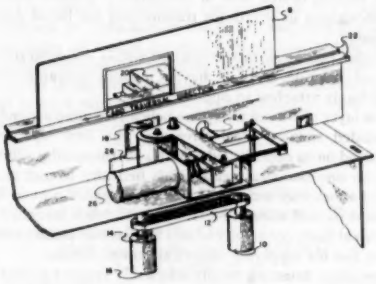
APPARATUS FOR READING ENCODED INFORMATION ON A CARRIER SUBJECT TO NON-UNIFORM MOTION

Ronald W. Silkman, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1984, Ser. No. 657,312

Int. Cl.[4] G06K *7/016*

U.S. Cl. 235—474 **4 Claims**



1. Oscillation compensating means for an apparatus for reading machine-readable information encoded on a record element transported by a transport mechanism that subjects the coded record element to oscillations as it is transported, said apparatus comprising:

guide path defining means for defining a guide path for the record element;

motive means for moving the record element along the guide path;

sensor means for sensing the information encoded on the record element and producing a signal corresponding thereto as the record element is moved along the guide path past the sensor means;

detector means for detecting the forward and reverse motion of said record element and for providing corresponding output signals;

signal means responsive to the output signals of said detector means for generating a signal that is directly proportional to the absolute forward motion of the record element; and

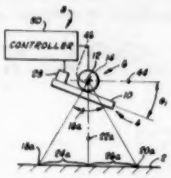
processor means responsive to the information signal derived from the sensor means and said signal means for accurately decoding the information read from said record element.

4,553,028

APPARATUS AND METHOD FOR COMPENSATING ROLL OF A SCANNER PLATFORM

Dennis K. Reust, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 11, 1982, Ser. No. 407,139
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—201 **4 Claims**



1. A roll-compensating scanning apparatus, comprising:

a scanner platform having a scanner platform reference position and being susceptible to rotation from said scanner platform reference position about an axis;

scanner means, mounted on said scanner platform, for scanning an object in discrete paths, said scanner means including:

receptor means for receiving input from said object, said receptor means being positionable in a receptor means reference position; and

rotator means for continuously rotating said receptor means in a scanning direction through a scanning angle, said scanning angle commencing at a first location relative to said receptor means reference position when said scanner platform is at said scanner platform reference position;

detector means for detecting a roll angle through which said scanner platform rotates from said scanner platform reference position about said axis; and

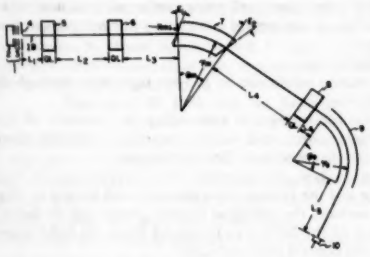
control means, responsive to said detector means, for commencing said scanning angle at a second location relative to said receptor means reference position when said roll angle is in a direction opposite said scanning direction and for commencing said scanning angle at a third location relative to said receptor means reference position when said roll angle is in said scanning direction.

4,553,029

MASS SPECTROMETER

Hisashi Matsuda, Hyogo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,427
Claims priority, application Japan, May 24, 1983, 58-91315
Int. Cl.⁴ H01J *49/32*
U.S. Cl. 250—296 **4 Claims**



1. A mass spectrometer having an ion source, an ion detector for detecting the ions emitted from the ion source, a uniform magnetic field set up between the ion source and the ion detector, an electric field set up between the magnetic field and the ion detector, and two electrostatic quadrupole lenses disposed between the ion source and the magnetic field in spaced relation to each other for converging the beam of the ions in a direction perpendicular to the plane of the orbit of the beam and for diverging the beam radially of the beam,

another electrostatic quadrupole lens disposed between the magnetic field and the electric field to converge the beam in the direction of the plane of said orbit, such that the deflection angle ϕ_m of the beam in the magnetic field, the radius r_m of the circle described by the beam in the magnetic field, the deflection angle ϕ_e of the beam in the electric field, and the radius r_e of the circle described by the beam in the electric field are so set as to satisfy the following relations:

$$82° \leqq \phi_e \leqq 88°$$

$$39° \leqq \phi_m \leqq 41°$$

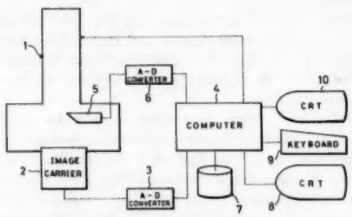
$$0.715 \leqq r_e/r_m \leqq 0.755$$

4,553,030

METHOD FOR AUTOMATIC ANALYSIS OF ELECTRON BEAM DIFFRACTION PATTERN

Moriyasu Tokiwai, Komaeshi; Sakumi Moriguchi, and Takao Shinkawa, both of Akishimashi, all of Japan, assignors to Jeol Ltd. and Central Research Institute of Electric Power Industry, both of Tokyo, Japan

Filed Feb. 29, 1984, Ser. No. 584,602
Claims priority, application Japan, Mar. 9, 1983, 58-38622
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—307 **5 Claims**



1. Method for automatic analysis of an electron beam diffraction pattern obtained by a transmission type electron microscope comprising:

(a) a step for capturing said electron beam diffraction pattern as a two dimensional array of digitized intensity values, each element in the array having a value Uxy;

(b) a step for building a frequency distribution of intensity values from said two dimensional array;

(c) a step for deciding whether said diffraction pattern is composed of only diffraction spots, only diffraction rings, or both diffraction spots and rings, on the basis of said frequency distribution of intensity values;

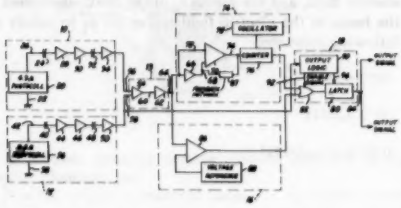
(d) a step for accumulating lattice spacing d-values corresponding to each diffraction spot or ring appearing in said diffraction pattern from the two dimensional array by an algorithm selected on the basis of the result of said step (c); and

(e) a step for determining the specimen material corresponding to said electron diffraction pattern by collating said lattice spacing d-values determining in step (d) with the d-values of the various materials in a crystal database.

4,553,031
OPTICAL FIRE OR EXPLOSION DETECTION SYSTEM AND METHOD

John M. Cholin, Oakland; Ray Voorhis, Midland Park, both of N.J., and Jeffrey G. Cholin, Pound Ridge, N.Y., assignors to Firetek Corporation, Hawthorne, N.J.

Filed Sep. 6, 1983, Ser. No. 529,275
Int. Cl.[4] G08B 17/12
U.S. Cl. 250—339 15 Claims



1. A fire and explosion detection system comprising:

(a) at least one of a first channel means, including a first photocell, for the conversion of incident radiant energy of a first narrow band of wavelengths characteristic of a fire into a first electrical signal;

(b) at least one of a second channel means, including a second photocell, for the conversion of incident radiant energy of a second narrow band of wavelengths corresponding to background black body emissions into a second electrical signal;

(c) circuit means for determining the ratio between said first and second electrical signals, said means for determining the ratio producing a third electrical signal when the ratio of the first to the second electrical signal exceeds a predetermined number;

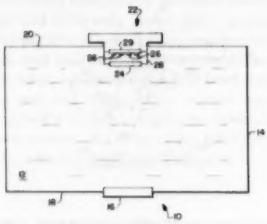
(d) first circuit means responsive to said third electrical signal to detect the flicker frequency, including a low and high frequency component, of said third electrical signal and to produce a first warning signal if the frequency of said high frequency component is a predetermined number, said first circuit means including averaging amplifier means, comparator means and signal frequency counting circuit means, one input of said comparator means and the input to said averaging amplifier means connected to the output of said ratio determining circuit means, the output of said averaging amplifier means connected to a second input of said comparator means, the output of said comparator means connected to the input of said signal frequency counting means, the output of said signal frequency counting means producing said first warning signal, said averaging amplifier means filtering said third electrical signal to produce a floating reference signal at the input to the comparator means proportional to the low frequency component, the output of the comparator means producing a signal corresponding in frequency to the high frequency component of said third electrical signal, said signal frequency counting means producing said first warning signal when the number of cycles counted per period of time exceed a preset count; and,

(e) second circuit means responsive to the magnitude of said third electrical signal to produce a second warning signal if the third electrical signal exceeds a predetermined signal magnitude.

4,553,032
INFRARED ENERGY GAGE

Saukwan Lo, Fridley, and Richard J. Borken, St. Louis Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 431,437
Int. Cl.[4] G01J 1/00
U.S. Cl. 250—339 20 Claims



1. An infrared energy device for measuring the energy content of a hydrocarbon fuel, comprising:

an infrared light source adapted to emit infrared light of incident intensity I_o into said hydrocarbon fuel including wavelengths absorbed by the CH and C—C groups;

means for detecting the absorbency of said infrared light by said groups;

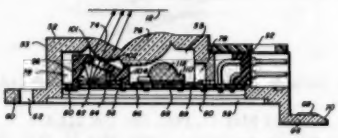
means for determining the concentration of said groups from the absorbency of said infrared light; and

means for determining the energy content of said fuel from said concentrations.

4,553,033
INFRARED REFLECTANCE DENSITOMETER

Fred F. Hubble, III, Rochester, and James P. Martin, Dansville, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1983, Ser. No. 525,849
Int. Cl.[4] G01N 21/47; G03G 15/08
U.S. Cl. 250—353 11 Claims



1. An infrared densitometer for measuring the relative reflectance of a specularly reflecting surface of a photosensitive web manifesting degrees of translation during measurement including:

a collimating lens,

a light source positioned to project light rays through the collimating lens,

means for measuring and controlling the intensity of light from said source, said means comprising a control photodetector disposed near the light source,

an aperture box, the aperture box enveloping the light source and the control photodetector and having an elliptical surface, the elliptical surface positioned to focus a portion of the light rays projected from the light source onto the control photodetector,

a collector lens positioned to receive light rays reflected from the surface of said web,

a signal photodetector,

a field lens, the field lens positioned to focus the light rays received from the collector lens onto the signal photodetector, the collector lens and field lens positioned to

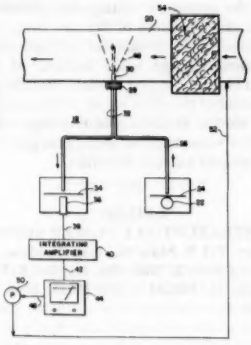
project a relatively constant amount of light rays reflected from the surface of said web onto the signal photodetector such that signal photodetector signals are independent of the translation of said surface of said web.

4,553,034

ION EXCHANGE RESIN INTRUSION MONITOR

William A. Byers, Penn Hills, and Steven H. Peterson, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1983, Ser. No. 557,569
Int. Cl.[4] G01N *21/38*; G01J *1/58*
U.S. Cl. 250—458.1 **15 Claims**



1. A monitor for detecting the presence of fluorescent particles of ion exchange resin in a water flow channel that receives effluent from an ion exchange system comprising

(a) probe means comprising a first bundle of optical fibers disposed to inject fluorescence-stimulating light into said water flow,

(b) detector means disposed to receive emitted fluorescent light from any particles in said water illuminated by the light emitted from said probe means,

(c) means actuatable by said detector means for generating a signal to indicate the presence of particles in said water; and

(d) adjustment means to adjust the water flow rate in said ion exchange system to a value which minimizes resin leakage.

4,553,035

DATA ACQUISITION CONTROL METHOD AND SYSTEM FOR A HAND HELD READER

Igor Malinsky, N. Miami Beach; Jose B. Cofino, and Richard J. McKay, both of Miami, all of Fla., assignors to Mylex Corporation, Hialeah Garden, Fla.

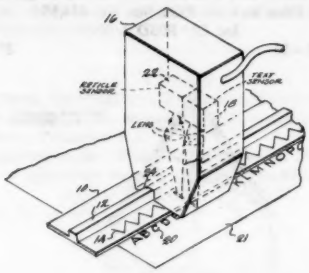
Filed Aug. 30, 1983, Ser. No. 527,811
Int. Cl.[4] G06K *7/10*
U.S. Cl. 250—566 **17 Claims**

1. Apparatus for controlling the acquisition of data in an optical character recognition system having a manually movable optical head for converting optical data to a plurality of electrical signals, said apparatus comprising:

a manually positionable aligning means for guiding manual movement of said head along a series of characters on said medium;

a reticle forming a sequence of optically differentiable portions extending on and along said aligning means in the direction of scanning at positions unrelated to the positions of said characters in the direction of scanning;

means, attached to said head, for reading said characters and reticle; and



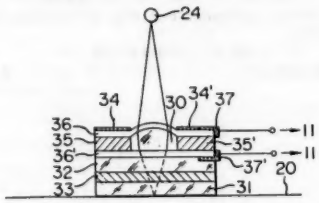
means, responsive to said reading means, for causing said head to generate one of said electrical signals every time said head has moved a predetermined distance.

4,553,036

INFORMATION DETECTING APPARATUS

Naoto Kawamura, Inagi, and Kazuya Matsumoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 464,579, Feb. 7, 1983, Pat. No. 4,467,195, which is a continuation of Ser. No. 244,259, Mar. 16, 1981, abandoned, which is a continuation of Ser. No. 967,392, Dec. 7, 1978, abandoned. This application May 2, 1984, Ser. No. 606,158
Claims priority, application Japan, Dec. 8, 1977, 52-147600; Dec. 8, 1977, 52-147601; Jul. 5, 1978, 53-81792; Dec. 2, 1978, 53-149204
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **1 Claim**



1. An information detecting apparatus, comprising:

a transparent carrier member having a face in contact with an original information-bearing member;

a light source for illuminating the original member through said transparent carrier member;

a light-receiving sensor on said transparent carrier member between said light source and the original member, said light-receiving sensor being a substantially one-dimensional array extending in a major scanning direction;

an opaque member on said transparent carrier member for substantially preventing impingement of light on said light-receiving sensor directly from said light source and for providing substantially one-dimensional illumination of the original member in the major scanning direction; and

driving means for producing relative movement between said light-receiving sensor and the original member.

4,553,037

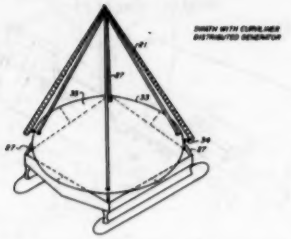
SOLAR BREEZE POWER PACKAGE AND SAUCER SHIP

Sidney E. Veazey, Box 497, Rte. 2, Fredericksburg, Va. 22405

Filed Nov. 26, 1982, Ser. No. 444,554

Int. Cl.[4] F03D 3/00

U.S. Cl. 290—55 37 Claims



1. An apparatus for use on a land site and land vehicle for gathering and converting natural energy into electrical energy comprising:

(a) a vertical axis wind turbine means suitably attached to a support means for providing energy to a energy storage system, said attached position of the vertical axis wind turbine means is interfaced with a curvilinear generator located at the bottom of the windmill blade which doubles as a railing for the land site apparatus location and land vehicle,

(b) a solar cell means suitably attached to said vessel for providing energy to said energy system, and

(c) an energy storage system suitably affixed and interfaced with said vertical axis wind turbine means and said solar cell means sufficient to accept energy therefrom and store for later use.

4,553,038

CENTRAL LOCKING INSTALLATION

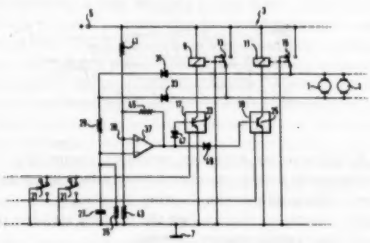
Rainer Fey, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,935

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314573

Int. Cl.[4] H01H 47/22

U.S. Cl. 307—10 AT 5 Claims



1. Central locking installation for motor vehicles, comprising:

(a) a plurality of locking drives;

(b) at least one control switch manually switchable between one first switch position and one second switch position;

(c) a time control coupled to the control switch and to one locking drive, which in a first switch position of the control switch transmits a first drive signal to the locking drives, which drives said locking drives during a first predetermined time period in a locking direction and which in a second switch position of the control switch transmits a second drive signal to the locking drives, which drives said locking drives during a second predetermined time period in an unlocking direction;

(d) a condenser;

(e) a first circuit connected to the condenser and the time control for permitting a charging current to the condenser in a first current direction, as long as the time control transmits the first or the second drive signal;

(f) a second circuit connected to the condenser which enables a charging current to the condenser in a second current direction opposite to the first current direction, as long as the time control transmits none of the drive signals; and

(g) a threshold value stage with hysteresis property connected to the condenser and the time control which responds to the condenser voltage and prevents at least the transmittal of the second of the two drive signals to the locking drive if the condenser voltage exceeds a first predetermined voltage value because of the charging current flowing in the first current direction and permits the transmittal of the drive signal if the condenser voltage reaches a second predetermined voltage value differing from the first value because of the charging current flowing in the second current direction.

4,553,039

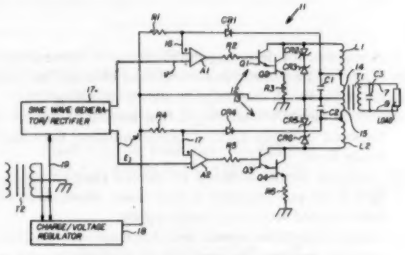
UNINTERRUPTIBLE POWER SUPPLY

Francis J. Stifter, 171 S. Main St., Natick, Mass. 01760

Filed Nov. 3, 1983, Ser. No. 548,517

Int. Cl.[4] H02M 7/537; H02V 9/00

U.S. Cl. 307—66 21 Claims



1. A variable voltage power supply comprising:

power source means;

voltage output means connectable between said power source means and a load, said voltage output means when connected to the load providing an AC output voltage therefor and electrical energy transfer between said power source and the load;

electronic switching means comprising first and second switching means each coupled to said power source means and said voltage output means;

reference source means comprising an AC source and means for producing from alternate half cycles thereof, respectively, first and second reference waveforms;

voltage comparator means comprising first comparator means for comparing said first reference waveform with one phase of said AC output voltage and a second comparator means for comparing said second waveform with the opposite phase of said AC output voltage, said first comparator means being operatively coupled to said first switching means so as to produce switching thereof that causes said output voltage to track said first waveform and said second comparator means being operatively coupled to said second switching means so as to produce switching thereof that causes said output voltage to track said second waveform; and

electrical energy storage means coupled to said voltage output means and storing energy provided by said source means during said switching of said first and second switching means.

4,553,040

INDUCTIVE PROXIMITY SWITCH

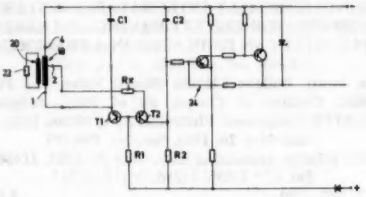
Dirk Trüper, Würthstr. 6, 6800 Heidelberg, and Klaus Hermle, Römerstrasse 11, 7303 Neuhausen/Fildern, both of Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,738

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225193

Int. Cl.⁴ H01H *35/00*

U.S. Cl. 307—116 **10 Claims**



1. Inductive proximity switch comprising a feeler head with a feeler coil as a component of an LC oscillator circuit of a high frequency oscillator with said feeler coil being disposed in the interior of a cup core being open at one end thereof, said feeler head serving to generate a directionally oriented, alternating magnetic field, wherein the feeler coil of the feeler head is coupled with a closed circuit loop being disposed at the open end of the cup core and adjacent to its outer wall, said closed circuit loop comprising an inductance and an ohmic resistance such that the oscillator is damped when the field is undisturbed and such that damping of the oscillator is reduced when the field is disturbed by a non-magnetic metal object such that an oscillation occurs.

4,553,041

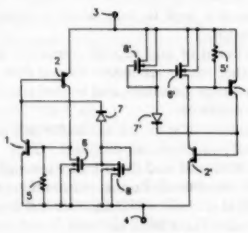
MONOLITHIC ZERO CROSSING TRIAC DRIVER

Hyung J. Yim, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 22, 1983, Ser. No. 525,196

Int. Cl.⁴ H03K *17/72*

U.S. Cl. 307—252 A **9 Claims**



1. A monolithic triac driver having a first terminal and a second terminal coupled for receiving an AC voltage, comprising:

a first thyristor having an anode coupled to said first terminal, a cathode coupled to said second terminal, a base and a gate;

a first field effect transistor having a gate, and having current-carrying electrodes coupled between said gate of said first thyristor and said cathode of said first thyristor; and

a first photovoltaic diode having a cathode coupled to said base and an anode coupled to said gate of said first field effect transistor.

4,553,042

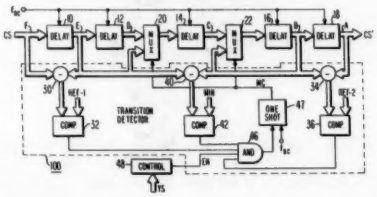
SIGNAL TRANSITION ENHANCEMENT CIRCUIT

Eric P. Batterman, No. Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 517,833, Jul. 27, 1983,. This application Aug. 30, 1984, Ser. No. 646,032

Int. Cl.⁴ H03K *5/12, 6/04, 5/153*

U.S. Cl. 307—263 **20 Claims**



1. A signal processing circuit comprising:

an input for receiving input signals and an output at which output signals responsive to said input signals are produced;

a plurality of delaying means coupled in cascade between said input and said output for successively delaying said input signals;

detecting means, coupled to said plurality of delaying means and responsive to ones of said successively delayed input signals, for detecting a magnitude transition of said input signals; and

means, coupled to said plurality of delaying means and to said detecting means, for selectively coupling an input of one of said delaying means to an input of another one of said delaying means in response to said detecting of said magnitude transition.

4,553,043

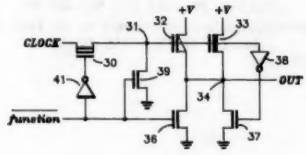
HIGH SPEED DRIVE CIRCUIT

Lanny L. Parker, Mesa, Ariz., assignor to Codex Corporation, Mansfield, Mass.

Filed Mar. 28, 1983, Ser. No. 479,226

Int. Cl.⁴ H03K *17/04, 17/693*

U.S. Cl. 307—270 **5 Claims**



1. A line driver circuit having an input and an output terminal, comprising: a controllable coupler for coupling an input signal present at the input terminal; a first transistor having a control electrode coupled to the controllable coupler to receive the input signal from the controllable coupler, the first transistor being for coupling voltage from a voltage terminal to the output terminal; a second transistor coupled in parallel with the first transistor and having a control electrode coupled to the controllable coupler to receive the input signal from the controllable coupler, and wherein the first transistor has a

lower threshold voltage than the second transistor; and a third transistor coupled to the output terminal for discharging the output terminal and having a control electrode coupled to a control signal input.

4,553,044

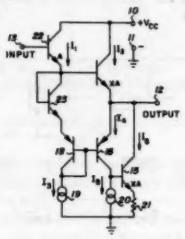
INTEGRATED CIRCUIT OUTPUT DRIVER STAGE

Harry J. Bittner, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 11, 1983, Ser. No. 493,539

Int. Cl.[4] H03K *17/60, 3/26*

U.S. Cl. 307—270 **6 Claims**



1. A monolithic integrated circuit output stage having input and output terminals and first and second power supply rails connectable to a source of operating power, said stage comprising:

a pair of like conductivity type transistors having their emitter-collector circuits coupled in series between said first and second rails with the juncture of said pair providing said output terminal;

means for driving the base of one of said pair from said input terminal;

current mirror means having an input coupled to said input terminal and an output coupled to drive the base of the other of said pair, said current mirror means including a pair of constant current devices, one coupled to said current mirror input and the other coupled to said current mirror output; and

an emitter follower coupled to drive said input of said current mirror and having an input coupled to said input terminal.

4,553,045

LOGIC CIRCUIT WITH IMPROVED HYSTERESIS CHARACTERISTICS

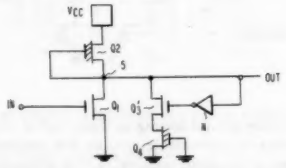
Tatsunori Murotani, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,392

Claims priority, application Japan, Feb. 10, 1982, 57-19914

Int. Cl.[4] H03K *3/356, 19/094*

U.S. Cl. 307—279 **12 Claims**



1. A logic circuit comprising a first terminal to which a first potential is applied, a second terminal to which a second potential is applied, an output terminal, a first field effect transistor of an enhancement type whose drain-source path is connected in series between said output terminal and said second terminal, means for receiving an input signal, means for supplying a gate of said first transistor with said input signal, a second field effect transistor of a depletion type whose drain source path is connected in series between said first terminal and said output terminal said second transistor having its gate connected to provide operation as a load element, a series circuit of a third field effect transistor of an enhancement type and a fourth field effect transistor of a depletion type connected directly to said output terminal at its one end and to said second terminal at its other end, inverting means responsive to a signal at said output terminal for generating an inverted signal having an opposite phase to the signal at said output terminal, and means for supplying a gate of said third transistor with said inverted signal.

4,553,046

MONOLITHICALLY INTEGRATABLE BISTABLE MULTIVIBRATOR CIRCUIT HAVING AT LEAST ONE OUTPUT THAT CAN BE PLACED IN A PREFERENTIAL STATE

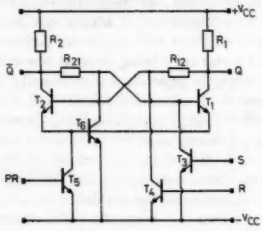
Angelo Alzati, Bollate; Claudio Diazzi, Milan, and Fabrizio Stefani, Cardano al Campo, all of Italy, assignors to SGS-ATES Componenti Elettronici SpA, Milan, Italy

Filed May 26, 1983, Ser. No. 498,595

Claims priority, application Italy, May 26, 1982, 21486 A/82

Int. Cl.[4] H03K *3/286, 3/353, 3/287*

U.S. Cl. 307—289 **4 Claims**



1. A monolithically integratable bistable multivibrator circuit having a pair of inputs and a pair of outputs, said circuit comprising a first transistor, a second transistor, a third transistor, and a fourth transistor, each of said transistors having a first terminal and a second terminal and a control terminal, and each of said transistors being of the same conductivety type, wherein:

said second terminal of said first transistor is connected through a resistance means to a first pole of a DC supply voltage generator and to said control terminal of said second transistor;

said second terminal of said second transistor is connected through another resistance means to said first pole of said DC supply voltage generator and to said control terminal of said first transistor;

said second terminal of said first transistor comprises a first output of said pair of circuit outputs;

said second terminals of said third transistor and said fourth transistor are respectively connected to said control terminals of said first transistor and said second transistor;

said first terminals of said third and said fourth transistor are connected to a second pole of said DC supply voltage generator;

said control terminals of said third and fourth transistors comprise said pair of input terminals of said circuit;

said circuit further comprising a fifth transistor and a sixth transistor, each of said transistors having a first terminal and a second terminal and a control terminal, and being of the same conductivity type as that of said first through fourth transistors, wherein:

said first terminal of said fifth and sixth transistors are connected to said second pole of said DC supply voltage generator;

said second terminal of said fifth transistor is connected to said control terminal of said sixth transistor and to said first terminals of said first and second transistors;

said second terminal of said sixth transistor is connected to said control terminal of said first transistor;

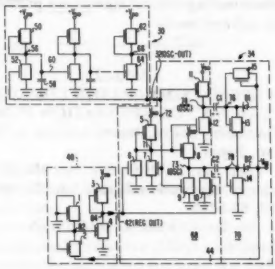
and said control terminal of said fifth transistor comprises a control terminal for placing said first output in a preferential prescribed state in response to an input applied thereto irrespective of input signals applied to said pair of inputs.

4,553,047

REGULATOR FOR SUBSTRATE VOLTAGE GENERATOR

Thomas E. Dillinger, Madison, Wis., and Terrance W. Kueper, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,145
Int. Cl.⁴ H03L *1/00*
U.S. Cl. 307—297 **5 Claims**



1. A substrate voltage generator for converting a supply voltage of a first polarity to a substrate voltage of an opposite polarity with reference to a ground potential, said generator including an oscillator for producing an alternating voltage from said supply voltage, a charge pump coupled to said oscillator for producing a direct voltage of said opposite polarity, and a regulator for controlling said charge pump so as to resist changes of said direct voltage from a nominal value, characterized in that said regulator comprises:

a voltage divider means having a pair of depletion-mode FETs coupled between said ground potential and said substrate for obtaining a portion of the voltage difference between said ground potential and said substrate voltage; and

an amplifier means for coupling an amplified portion of said voltage difference from said voltage divider to said charge pump for controlling said direct voltage.

4,553,048

MONOLITHICALLY INTEGRATED THERMAL SHUT-DOWN CIRCUIT INCLUDING A WELL REGULATED CURRENT SOURCE

Byron G. Bynum, and David L. Cave, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1984, Ser. No. 582,358
Int. Cl.⁴ H03K *17/30*
U.S. Cl. 307—350 **10 Claims**

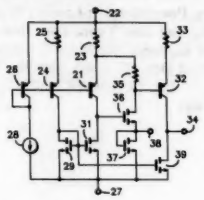
1. A monolithic integrated thermal shut-down circuit including a first supply voltage terminal, a second supply voltage terminal, and a voltage output terminal, said circuit comprising:

transistor means having a first path coupled between said first and said second supply voltage terminals for conducting a first current and having a second path coupled between a node and said second supply voltage terminal for conducting a second current, said first and second currents having substantially the same value;

first resistive means having a first terminal coupled to said node for conducting a third current;

second resistive means coupled between said first supply voltage terminal and said node for conducting said first current and said third current;

third resistive means having a first terminal coupled to said first supply voltage terminal and having a value substantially the same as said second resistive means for conducting a fourth current;



current establishing means coupled between said second terminal of said first resistive means and said second supply voltage terminal, and coupled to said transistor means for establishing said first current substantially the same as said second current; and

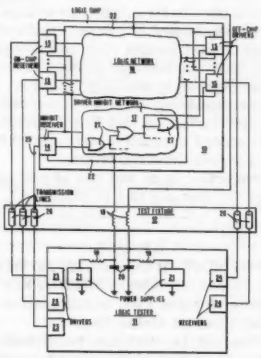
output means coupled between a second terminal of said third resistive means and said second supply voltage terminal, and coupled to a second terminal of said first resistive means for providing an output signal at said voltage output terminal.

4,553,049

OSCILLATION PREVENTION DURING TESTING OF INTEGRATED CIRCUIT LOGIC CHIPS

Charles W. Cha, Yorktown Heights; John W. Hartman; David A. Kiesling, both of LaGrangeville, and William J. Scarpero, Jr., Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1983, Ser. No. 540,072
Int. Cl.⁴ H03K *19/092, 17/62*
U.S. Cl. 307—443 **12 Claims**



1. An integrated circuit logic chip comprising:

a plurality of on-chip receivers;

a plurality of off-chip drivers;

a logic network for connecting said on-chip receivers and said off-chip drivers in a predetermined logic configuration; and

driver inhibit means, responsive to an inhibit signal, for forcing said plurality of off-chip drivers to the same logi-

cal state at predetermined times during testing of said integrated circuit logic chip, said same logical state being the natural logical state of said off-chip drivers upon intial application of electrical power to said integrated circuit chip;

whereby integrated circuit logic chip oscillation during testing is prevented.

4,553,050

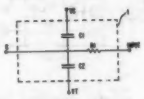
TRANSMISSION LINE TERMINATOR-DECOUPLING CAPACITOR CHIP FOR OFF-CHIP DRIVER

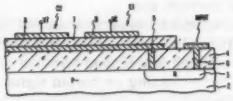
Irving Feinberg, Poughkeepsie; Leon L. Wu, Hopewell Junction, both of N.Y., and Leo Yuan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,318

Int. Cl.⁴ H03H *5/02, 7/38*

U.S. Cl. 307—443 **5 Claims**





1. A signal line terminator for a driver circuit energized by at least one source of voltage relative to ground and formed on a first semiconductor chip, said terminator comprising:

one capacitor for each said voltage source and at least one resistor formed on a second chip,

said first and second chips being connected to each other,

one terminal of said resistor and one terminal of each said capacitor being connected to said ground,

the other terminal of said resistor being connected to said driver circuit,

the other terminal of each said capacitor being connected to a respective one of said at least one voltage source,

said resistor being formed of a doped region of one conductivity type in said second chip and covered by a first dielectric layer apertured to provide first and a second conductive contacts to said region, and

each said capacitor being formed of a first conductive layer on the upper surface of said first dielectric layer and a respective second conductive layer spaced from said first layer by a second dielectric layer,

said first conductive layer and one of said contacts being connected together and to said ground.

4,553,051

PMOS INPUT BUFFER COMPATIBLE WITH LOGIC INPUTS FROM AN NMOS MICROPROCESSOR

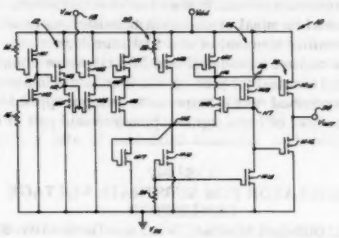
Cordell E. Prater, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 18, 1983, Ser. No. 514,431

Int. Cl.⁴ H03K *19/094, 3/037, 3/356*

U.S. Cl. 307—475 **6 Claims**

1. An input buffer comprising means responsive to logic input signals at selected voltage levels for providing corresponding control signals at level-shifted voltage levels, Schmitt trigger means responsive to said control signals for providing corresponding trigger output signals with selected hysteresis, and output means responsive to said trigger signals for providing buffer output signals having improved compatibility for driving selected circuit means, said level-shifting means comprising MOS transistor means forming voltage divider means for providing a reference voltage at a selected level, a pair of MOS transistor means forming a current mirror means, MOS transistor means biased by said reference voltage to provide



desired current levels in one of said current mirror transistor means, and additional MOS transistor means responsive to said logic input signals and to said current mirror means for assuring said corresponding control signals are provided at desired level-shifted voltage levels.

4,553,052

HIGH SPEED COMPARATOR CIRCUIT WITH INPUT-OFFSET COMPENSATION FUNCTION

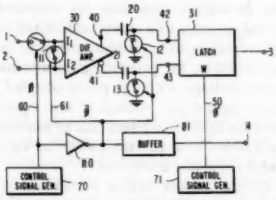
Kazukiyo Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,224

Claims priority, application Japan, Apr. 23, 1982, 57-68456; Apr. 23, 1982, 57-68460

Int. Cl.⁴ H03K *5/24, 17/16*

U.S. Cl. 307—494 **14 Claims**



1. A comparator circuit comprising first and second signal terminals, a differential amplifier having first and second input terminals and first and second output terminals, a first switch coupled between said first signal terminal and said first input terminal of said differential amplifier, a second switch coupled between said first and second input terminals of said differential amplifier, first and second nodes, a first capacitor coupled between said first output terminal of said differential amplifier and said first node, a second capacitor coupled between said second output terminal of said differential amplifier and said second node, a third switch coupled between said first node and a reference potential, a fourth switch coupled between said second node and said reference potential, a latch circuit having first and second input terminals, a write conirol terminal and an output terminal, means for connecting said first node to said first input terminal of said latch circuit, means for connecting said second node to said second input terminal of said latch circuit, means for supplying control terminals of said second to fourth switches with a first clock signal, means for supplying a control terminal of said first switch with a second clock signal having the opposite phase to said first clock signal, and means for supplying said write control terminal of said latch circuit with a third clock signal having a higher frequency than said

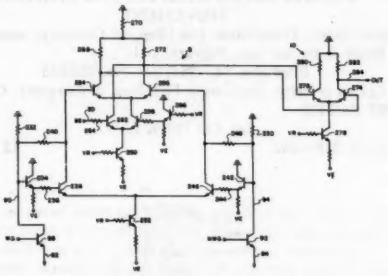
first clock signal, in which a comparison result of signals at said first and second signal terminals are derived a plurality of times from said output terminal of said latch circuit in response to said third clock signal during the same period that said second clock signal takes an active level for said first switch.

4,553,053

SENSE AMPLIFIER

Richard H. Ong, Phoenix, and Peter C. Economopoulos, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 3, 1983, Ser. No. 538,394
Int. Cl.⁴ H03K *5/24*; G11C *7/06*
U.S. Cl. 307—530 **5 Claims**



1. A sense amplifier for a computer memory unit, said sense amplifier comprising:

(a) an input stage differential amplifier means, having input terminals adapted to receive differential input signals and output terminals adapted to transmit first differential output signal, for generating said first differential output signals;

(b) a second stage differential amplifier means, operatively connected to said input stage differential amplifier means, for generating second differential output signals in response to said first differential output signals;

(c) output amplifier means, operatively connected to said second stage differential amplifier means, for generating an output signal in response to said second differential output signals; and

(d) feedback means, operatively connected to said input terminal and said output terminal of said input stage differential amplifier means, for providing a negative feedback loop of said input stage differential amplifier means to reduce the effective voltage swing of said differential input signals thereby enhancing the speed of response of said sense amplifier.

4,553,054

POWER ON RESET CIRCUIT FOR MICROPROCESSOR

Kiyoshi Kase, Chiba, and Masaru Fukuta, Yokohama, both of Japan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1983, Ser. No. 463,709
Int. Cl.⁴ H03K *5/153*
U.S. Cl. 307—597 **4 Claims**

1. A pulse generating circuit for generating a pulse when a voltage is applied thereto comprising:

an input for receiving an applied voltage;

an output;

a first capacitance to be charged from said input;

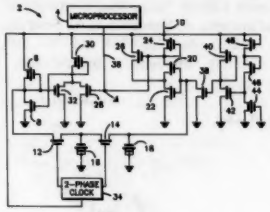
first switch means having a first end coupled to said input and a second end coupled to said first capacitance to control the charging of said first capacitance;

a second capacitance larger than said first capacitance to be charged by said first capacitance;

second switch means coupled between said first capacitance and said second capacitance to control the charging of said second capacitance;

control means connected to said first switch means and said second switch means to enable alternately said first switch means to charge said first capacitance and second switch means to charge said second capacitance;

third switch means connected to said second capacitance to apply a first predetermined voltage to said output when the voltage on said second capacitance is less than a predetermined value and to apply a second predetermined voltage different from said first predetermined voltage to said output when the voltage on said second capacitance is greater than the predetermined value;



inverter means having an output coupled to said first end of said first switch means and having an input; and

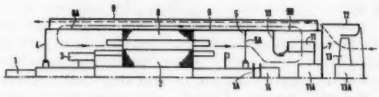
NOR gate means having an output coupled to said inverter means input, a first input coupled to the output of said pulse generating circuit, and a second input coupled to said inverter means output.

4,553,055

COOLING ARRANGEMENT FOR AN ENCLOSED ELECTRIC MACHINE

Erich Auernhammer, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,644
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 8321093[U]
Int. Cl.⁴ H02K *9/06*
U.S. Cl. 310—62 **1 Claim**



1. In a cooling arrangement for an enclosed electric machine having a shaft on one end and an end plate end face on the other with an internal fan and with an external fan lodged in a fan shell disposed in front of the end plate end face, the external fan blowing the cooling air between the hollow fins traversed by internal air, said hollow fins being applied axially on the circumference of a stator housing which is closed on the drive side by a first bearing bracket and communicating through ports in both end regions of the stator housing with the interior of the machine, there being provided, between the ports adjacent to the external fan and a stator, an air deflection surface which closely hugs and is supported by the stator housing on the circumferential side and extends crosswise to the shaft with concentric spacing, the improvement wherein a second bearing bracket, connected to and disposed inside of the stator housing between the stator and the air deflection surface on the stator housing, has openings for the internal air, and the stator housing is releasably closed by the end plate end face on which internally a motor for the internal fan is mounted which in

spaced relation surrounded by correlated ports borders laterally on the air deflection surface, and between the motor and internal end of the shaft; a rotation sensor coupled with the latter is disposed in the internal air stream and a fan shell having a motor-driven external fan is releasably engaged to the front of the end plate end face.

4,553,056

CONFIGURATION AND BEARING FOR A MOTOR-DRIVEN LINEAR ACTUATOR

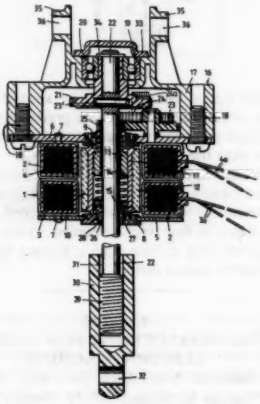
Jean-Francois Pfister, Sonceboz, Switzerland, assignor to Societe Industrielle de Sonceboz S.A., Sonceboz, Switzerland

Filed Mar. 22, 1984, Ser. No. 592,129

Claims priority, application Switzerland, Mar. 30, 1983, 1777/83

Int. Cl.⁴ H02K *7/06*

U.S. Cl. 310—80 **12 Claims**



1. In a linear actuator of the type comprising an electric motor having a stator, a rotor comprising a cylinder of magnetic material mounted for rotation adjacent said stator, and a rotary assembly coaxial with and driven by said rotor, a speed-reducer having a driving gear integral with said driven rotary assembly of said motor and a further gear that is driven by said driving gear, a rotary actuating stem which rotates with said driven gear of said speed-reducer and which includes a threaded portion situated outside of said motor and said speed-reducer, a driven linear-motion part including a thread meshing with said threaded portion of said stem and cooperating with said stem to move said linear-motion part linearly parallel to the longitudinal axis of said stem when said stem rotates, and means for preventing rotation of said linear-motion part, the improvement wherein

said speed-reducer is disposed coaxially with and adjacent to said motor, said driving gear and said driven gear of said speed-reducer being coaxial with each other and with said driven rotary assembly and said rotor of said motor, said stem passing axially through said rotor and said rotary assembly of said motor, and said threaded portion of said stem being situated in proximity to the side of said motor remote from said speed-reducer,

a first stem bearing disposed at the end of said speed-reducer remote from said motor, and

a further bearing fixed at the end of said motor remote from said speed reducer, said further bearing having two portions which are attached to one another and which are radially movable relative to one another, one of said portions comprising a second stem bearing which is situated at said end of said motor whereby said stem is supported for rotation between said first and second stem bearings which are axially spaced from one another by a distance at least equal to the combined axial dimensions of said motor and said speed reducer, the other of said portions of said further bearing being a radially fixed bearing for at least one of said rotor and said driven rotary assembly, said second stem bearing taking the form of a socket portion of said further bearing which is capable of resiliently moving radially relative to the portion of said further bearing constituting said radially fixed bearing,

said stem extending as a cantilever from said radially movable socket portion of said further bearing outwardly of said motor into thread engagement with said linear motion part.

4,553,057

CARBON BRUSH WITH PIN FOR LIMITING MOVEMENT

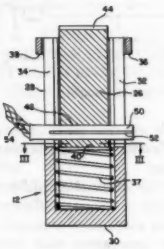
Abdul Saeed, Hünstetten, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 14, 1984, Ser. No. 651,053

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337125

Int. Cl.⁴ H02K *13/00*

U.S. Cl. 310—242 **12 Claims**



1. A carbon brush assembly, comprising:

a brush box having a slit along one side thereof;

a carbon brush slidably mounted in said brush box;

a spring connected between said brush box and said brush, and acting on one end of said brush to resiliently urge the other end of said brush outwardly from an outer end of said brush box;

an electrically conductive pin inserted transversely in said brush in electrical contact therewith and extending through said slit for movement therealong;

a brush lead electrically connected to said pin;

a stop associated with said slit adjacent said outer end for limiting movement of said pin along said slit under the influence of said spring and so retaining said pin in said slit when said brush wears out;

part of said pin being elastically deformable transversely to the longitudinal extent of said pin, and said brush having a transverse bore therein which deforms said part whereby said pin is retained in said bore; and

said pin having a longitudinal incision extending from one end thereof, and said brush lead being connected to the other end thereof.

4,553,058

LOW PROFILE DIRECT CURRENT MOTOR

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 30, 1984, Ser. No. 595,483

Int. Cl.⁴ H02K *23/54*

U.S. Cl. 310—268 **9 Claims**

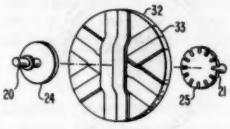
6. A low profile electric motor, said motor comprising:

an armature having a disk-shaped core with front and rear

faces, each of said faces having a plurality of armature windings in physical contact with said armature, each turn of said windings being wound along said front and rear faces and terminating in first and second free ends, each turn extending across each face over the cental portion of the face;

a first shaft assembly centrally located with respect to said armature and rigidly connected to said windings along said rear side;

a molded enclosure covering said armature and said windings, said first and second shaft assemblies extending through respective sides of said enclosure, said first and second free ends extending through one side of said enclosure;



front and rear plates each having a pair of arc-shaped magnetic poles of opposite polarity, said plates being mounted on said first and second shaft assemblies, respectively, in spaced parallel position with said armature carrying said covering therebetween and arranged to provide a flow of magnetic flux perpendicular to said front and rear faces;

commutator means positioned on one of said shaft assemblies and operatively connected to said first and second free ends for intermittently supplying a power source to a selected one of said windings; and

brush means operatively coupled to said commutator means for connecting said power source to said commutator.

4,553,059

PIEZOELECTRIC ACTUATOR AND A PIEZOELECTRIC PUMP INJECTOR INCORPORATING THE SAME

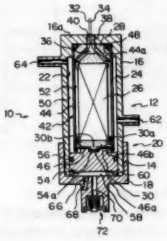
Seiko Abe, Okazaki; Yasuyuki Sakakibara, Nishio; Masahiro Tomita, Anjyo, and Kazuo Shinoda, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 26, 1984, Ser. No. 654,676

Claims priority, application Japan, Nov. 10, 1983, 58-209875

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—328 **9 Claims**



1. A piezoelectric actuator comprising:

a hollow casing having an axial cavity;

a column of piezoelectric elements received coaxially in said cavity and supported at an end by said casing;

means for applying an electric field to said column of piezoelectric elements to develop piezoelectric stress therein causing displacement of the other end of said column of elements;

output means connected to said other end of the column of piezoelectric elements for transmitting the displacement of said other end to the outside of said casing;

an axially deformable enclosure fluid-tightly surrounding said column of piezoelectric elements and disposed at least in part between said casing and said column of piezoelectric elements to divide said cavity into an outer space and a sealed inner space;

a flowable, electrically insulative, thermally conductive material filled in said inner space; and

means for circulating a cooling medium through said outer space.

4,553,060

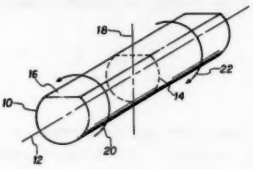
ELECTROMECHANICAL RESONATOR APPARATUS

William J. Domino, Santa Ana; Donald P. Havens, Costa Mesa, and Robert A. Johnson, Tustin, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 21, 1983, Ser. No. 553,614

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—333 **3 Claims**



1. Torsional resonator apparatus comprising in combination:

resonator base means having a longitudinal and transverse axis and at least one flat surface; and

unitary extensional transducer means having the shape of a rhomboid, attached to said resonator base means on said one flat surface thereof at an angle between said longitudinal and transverse axis of said resonating means, said transducer means being polarized in a single direction.

4,553,061

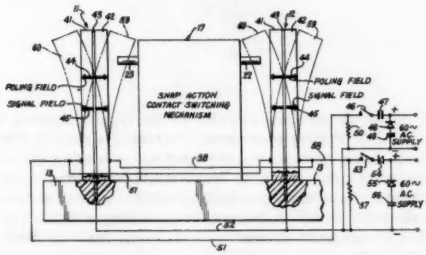
PIEZOELECTRIC BIMORPH DRIVEN DIRECT CURRENT LATCHING RELAY

Carmen P. Germano, Lyndhurst, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,672

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—332 **21 Claims**



1. A direct current latching relay including in combination a pair of electrically actuated bender-type piezoelectric drive members, a latching type snap-action switch mechanism having a set of electrical contacts that are selectively latched to remain either in the open or the closed condition in a snap-action manner upon successive actuation of the switch mecha-

nism, a push rod member for actuating the snap-action switch mechanism and engaged by the free end of the bender-type piezoelectric drive members whereby bending of the bender-type drive members selectively operates the snap-action switch mechanism and selectively operable direct current electric excitation circuit means connected to said bender-type drive members for selectively and respectively exciting each piezoelectric plate element thereof with a direct current excitation field which is always in-phase with the prepoling electric field previously permanently induced in the piezoelectric plate element whereby substantially no depolarization of the piezoelectric plate element occurs during successive operation of the relay, wherein the snap-action switch mechanism is of the type wherein axial movement of the push rod member in a first direction results in snap-action setting of the relay contacts in either an open or closed condition and reverse movement of the push rod member results in snap-action setting of the relay contacts in the opposite condition and wherein the free ends of said bender-type piezoelectric drive member engage opposite ends of the push rod member for respectively driving the push rod member in either of the two directions to thereby selectively set the relay in either an open or closed position.

4,553,062

CURVED GAS-FILLED DETECTOR WITH AVALANCHE OF ELECTRONS, AND STRIP

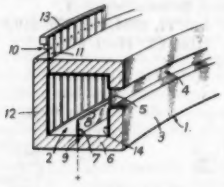
Jean Ballon, Saint Jean de Moirans; Vincent Comparat, and Joseph Pouxe, both of Grenoble, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Dec. 9, 1983, Ser. No. 559,794

Claims priority, application France, Dec. 30, 1982, 82 22219

Int. Cl.⁴ H01J *1/90*; G01T *1/18*

U.S. Cl. 313—93 **9 Claims**



1. A curved gas-filled detector of the type comprising a curved body defining an enclosure containing a gaseous fluid under a certain pressure, and provided with a window for the admission of a radiation to be detected and comprising on the inside, at least one elongated element which is parallel to cathode electrodes of which one may be coinciding with the window, said elongated element being insulated from the body, and receiving a high positive voltage, and forming means of picking up the avalanche of electrons created by the impact of a particle or radiation caused to traverse the gaseous fluid detector wherein the pick-up means is constituted by a structure of the type with at least one curved conducting strip held in such a way by the body that it projects into the enclosure and that one of its longitudinal edges is parallel to the axis of the window.

4,553,063

ELECTRICAL DISCHARGE ELECTRODE AND METHOD OF PRODUCTION THEREOF

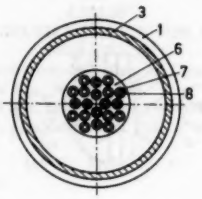
Karl F. Geibig, Sandhausen; Adolf Schwab, Karlsruhe-Durlach, and Dieter Stöckel, Birkenfeld, all of Fed. Rep. of Germany, assignors to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,884

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233584

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 313—325 **16 Claims**



1. An electrical discharge electrode for an electrical discharge gap, said electrode consisting of:

a metallic composite material including tubes of a metallic material having a high burn-off resistance embedded in and contacting a metallic matrix material of high electrical conductivity and filled with a core material; and

said core material consisting of a filler material which differs from said matrix and tube material and which promotes the emission of electrons from a surface of said electrode.

4,553,064

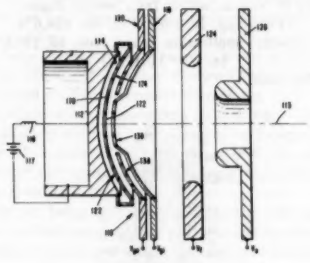
DUAL-MODE ELECTRON GUN WITH IMPROVED SHADOW GRID ARRANGEMENT

Kurt Amboss, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 30, 1983, Ser. No. 527,724

Int. Cl.⁴ H01J *29/48*

U.S. Cl. 313—448 **4 Claims**



1. A dual-mode electron gun comprising:

a cathode having an electron emissive surface defining a figure of revolution about a predetermined axis; a radially inner control grid spaced from said electron emissive surface along said axis and defining a figure of revolution about said axis along a surface substantially conforming to said electron emissive surface, said radially inner control grid projecting over the central portion of said electron emissive surface; an annular control grid coaxially disposed about said axis radially outwardly from said radially inner control grid along an extension of said surface substantially conforming to said electron emissive surface, said annular control grid projecting over an annular pe-

ripheral portion of said electron emissive surface; and a shadow grid coaxially disposed along said axis between said electron emissive surface and said radially inner and said annular control grids and defining a figure of revolution about said axis along a surface substantially conforming to said electron emissive surface, said shadow grid being substantially aligned with said radially inner and said annular control grids, wherein the improvement comprises:

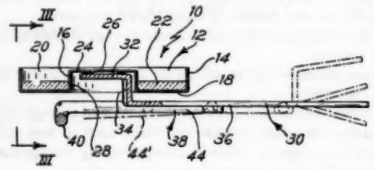
said shadow grid having a ring of electrically conductive material disposed radially between inner and outer grid portions of said shadow grid, said ring having an inner circumference substantially aligned with the circumference of said radially inner control grid along a direction normal to said electron emissive surface and having an outer circumference substantially aligned with the inner circumference of said annular control grid along a direction normal to said electron emissive surface.

4,553,065

GETTER ASSEMBLY WITH IMPROVED SUPPORT

Franco Pirota, Milan, Italy, assignor to Saes Getters S.p.A., Milan, Italy

Filed Nov. 7, 1983, Ser. No. 549,405
Claims priority, application Italy, Nov. 23, 1982, 24382 A/82
Int. Cl.⁴ H01J *29/94*; H01K *1/52*
U.S. Cl. 313—481 **5 Claims**



1. A getter assembly for cathode ray tubes comprising a container (12) of getter material having an external sidewall (14) and a bottom wall (18) which contains powdered getter material (22), a mounting tab (30) for attachment of the getter assembly to the cathode ray tube, said mounting tab extending radially outwards from a central upraised zone of the getter assembly, and a support means (38) in the form of a wire which distances the container (12) from the wall of the cathode ray tube characterized by the fact that said support (38) has a first portion (42) that extends in a direction perpendicular to the mounting tab and approximately parallel to the bottom wall (18); a second portion (44) integral with said first portion, which extends forming an angle with respect to the first portion (42), extending approximately parallel to the bottom wall (18); and a third portion (48) integral with and in continuation of said second portion, which extends perpendicularly to said mounting tab (30), curving initially downwardly and then upwardly to form a concave surface (50) facing said bottom wall (18) of the container.

4,553,066

MULTIPLE FILAMENT LAMP HAVING WIRE GRID TO PROVIDE FILAMENT REDUNDANCY

Larry R. Fields, Winchester, and George B. Kendrick, Lexington, both of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 8, 1983, Ser. No. 521,499
Int. Cl.⁴ H01K *1/26, 9/00*
U.S. Cl. 313—580 **14 Claims**

1. A multi-filament lamp comprising:

a tubular envelope having at least one pinch seal at an end thereof;

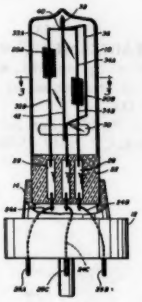
a halogen atmosphere within said tubular envelope;

at least two spaced apart, coiled filaments disposed in said tubular envelope;

means for supporting said coiled filaments in parallel to each other in the longitudinal direction within said tubular envelope;

lead-in wire means extending through the pinch seal and including a lead-in wire associated with each filament and a common lead-in wire;

means connecting said lead-in wire means to said means supporting said coiled filaments; and



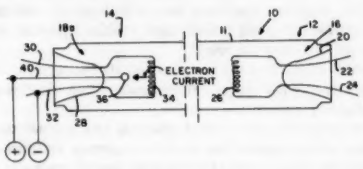
a wire grid in the form of a single, electrically conductive wire extending longitudinally within said tubular envelope substantially in parallel to said coiled filaments and disposed therebetween so as to isolate one filament from the other, thereby providing filament redundancy in the event of failure of one of said coiled filaments during lamp operation, an arc being formed between said failed filament and said wire grid as said filament approaches said wire grid, said wire grid being electrically coupled to said common lead-in wire.

4,553,067

METHOD OF DISPENSING MERCURY INTO A FLUORESCENT LAMP AND LAMP TO OPERATE WITH METHOD

William J. Roche, Merrimac, and Ralph P. Parks, Jr., Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 347,605, Feb. 10, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 658,454
Int. Cl.⁴ H01J *61/28*
U.S. Cl. 313—546 **3 Claims**



1. The method of releasing mercury into an arc discharge lamp having a tubular glass envelope with two ends, a mount sealed into each of said ends, each of said mounts including a glass stem having a pair of lead-in conductors sealed therein, and an electrode supported between each of said pairs of said lead-in conductors, one of said mounts having a third lead-in conductor, said method comprises the steps of positioning a mercury containing target on said third lead-in conductor within said lamp, and bombarding said target with a directed

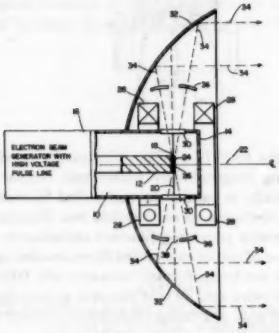
stream of electrons of sufficient energy to heat said target and release said mercury.

4,553,068

HIGH POWER MILLIMETER-WAVE SOURCE

Howard E. Brandt, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1983, Ser. No. 545,571
Int. Cl.[4] H01J *25/00*
U.S. Cl. 315—4 **20 Claims**



1. A device called a turbutron for producing millimeter wave pulses in the gigawatt power range, comprising in combination:

a high voltage diode configuration which is maintained under vacuum and comprised of an explosive, cylindrical cathode; an extended cylindrical anode structure and a gap spacing between said anode and cathode;

a megavolt coaxial pulse line for producing a beam of electrons under conditions of charge saturation, said beam of electrons being explosively emitted from said cathode to create an intensely oscillating relativistic turbulent electron plasma in and beyond said gap of said diode configuration, thereby producing pulsed high power millimeter waves radiating out radially and polarized parallel to the axis of said electron beam;

a plurality of microwave windows located transverse to the diode configuration gap at the outer cylindrical wall of said anode structure;

annular magnet coils located external and coaxial to said diode configuration that produce a strong uniform axial magnetic field in order to restrict the electrons in said turbulent electron plasma to pure longitudinal motion along said magnetic field;

wherein said relativistic turbulent electron plasma is predominately confined between said emission cathode and a virtual cathode and confined radially about said electron beam axis; and

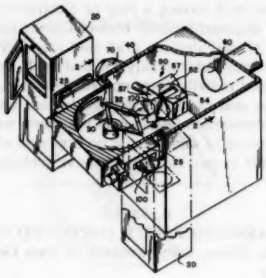
wherein said virtual cathode is an imaginary boundary beyond which few electrons pass and is oscillating both in electrical potential and position, the latter centered at a distance which is approximately twice the cathode anode gap.

4,553,069

WAFER HOLDING APPARATUS FOR ION IMPLANTATION

Kenneth H. Purser, Manchester, Mass., assignor to General Ionex Corporation, Newburyport, Mass.

Filed Jan. 5, 1984, Ser. No. 568,175
Int. Cl.[4] A61K *27/02*
U.S. Cl. 315—111.81 **23 Claims**



1. An apparatus for the implantation of ion into semiconductor wafers comprising:

a plurality of storage compartments that are loaded with a plurality of said wafers at atmospheric pressure;

means for pumping down each of said storage compartments to a vacuum;

a vacuum chamber for receiving an ion beam directed into said chamber;

valve means connected between each of said storage compartments and said vacuum chamber, each of said valve means being opened when its corresponding storage compartment has been pumped down to a vacuum;

a rotatable block located within said vacuum chamber for holding said wafers in position with respect to said ion beam so as to obtain ion implantation into said wafer, said rotatable block having a rear end, a front end and a plurality of sides connecting the rear end to the front end;

clamping means on each side of said block for holding a wafer against said block; and

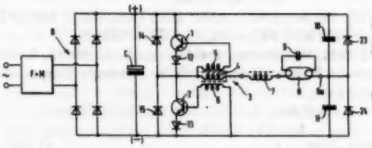
wafer handling means located within said vacuum chamber for transferring said wafers between said storage compartments and said wafer holding means.

4,553,070

ELECTRONIC BALLAST FOR A DISCHARGE LAMP

Martti Sairanen, Espoo, and Matti Virta, Helsinki, both of Finland, assignors to Oy Helvar, Helsinki, Finland

Filed Jul. 6, 1982, Ser. No. 395,269
Claims priority, application Finland, Sep. 18, 1981, 812930; Oct. 21, 1981, 813298; Jan. 12, 1982, 820095; Jan. 12, 1982, 820094
Int. Cl.[4] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **6 Claims**



1. An electronic ballast for discharge lamp (8) for restriction and stbilization of the current, comprising:

a high frequency oscillator electrically connected between

the terminals of a direct current supply and including a pair of series connected transistors (1, 2) with a first base drive transformer (3) coupled therebetween so as to bring said transistors (1, 2) into alternating phase operation,

a resonance circuit including an inductor (7) connected in a series between the primary winding (4) of the transformer (3) and said lamp (8), resonance capacitors (10, 11) connected in series with said lamp (8) and in series between the terminals of sid direct current supply, and an igniting capacitor (a) coupled parallel to said lamp (8), said igniting capacitor (9) being coupled parallel to the lamp (8) between the opposite ends of the electrode filaments thereof, and having a capacitance about ⅛–¼ of the sum of the capacitances of said resonance capacitors (10 and 11),

a filter capacitor (c) having a high charging ability and being coupled between the terminals of said direct current supply,

a first set of diodes (23, 24) connected parallel to said resonance capacitors (10, 11),

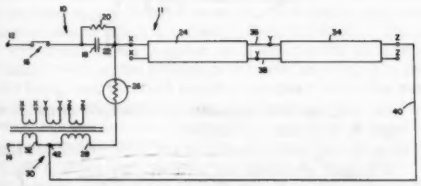
said sries connection of said inductor (7) and said lamp (8) being connected to a point common for said resonance capacitors (10, 11) and said diodes (23, 24).

4,553,071

ELECTRONIC BALLAST FOR FLUORESCENT LAMP

Gerald D. Boyd, Grants Pass, Oreg., assignor to Energies Technologies Corp., Grants Pass, Oreg.

Filed Jul. 18, 1983, Ser. No. 514,725
Int. Cl.⁴ H05B *37/02*
U.S. Cl. 315—244 **5 Claims**



1. An electronic ballast unit for a fluorescent lamp comprising: a circuit assembly having a capacitor and an inductor in series relationship with each other comprising a circuit tuned to a first frequency, said circuit assembly having a pair of input terminals for applying an AC voltage having a second frequency to the circuit assembly, wherein said first frequency is less than said second frequency, such that said circuit assembly is not tuned to the frequency of said AC voltage; means across said inductor for coupling a fluorescent lamp to the circuit assembly, said inductor being sufficiently reactive to produce a starting voltage a number of times greater than the input voltage, whereby the starting voltage can be used for energizing the fluorescent lamp; and a bleed resistor connected across said capacitor.

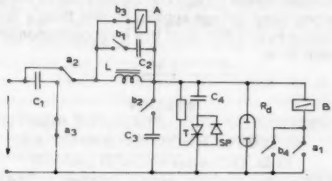
4,553,072

CIRCUIT CONNECTED IN SERIES WITH A DISCHARGE VALVE SOURCE

Frantisek Nemec; Petr Moos; Milan Bytesnik; Jan Kuba, and Tomislav Lacina, all of Prague, Czechoslovakia, assignors to Ceske vysoke uceni technicke v Praze, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 325,976, Nov. 30, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,668
Int. Cl.⁴ H05B *37/00*
U.S. Cl. 315—244 **4 Claims**

1. A circuit connected in series with a discharge valve source having an inductor connected in series with a discharge valve and a starting capacitor connected in parallel to the voltage source for compensation of the power factor, characterized in that the circuit further comprises a reasonance inductor capacitor connected in parallel to the inductor, and a resonance discharge valve capacitor connected in parallel to the discharge valve, the ratio of the capacity of the resonance inductor capacitor to the capacity of the resonance discharge



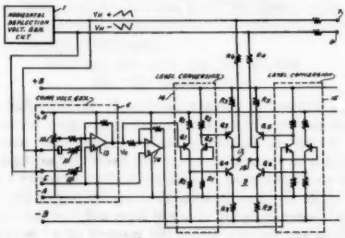
valve capacitor being between 3:2 and 4:1 and the magnitude of the inductance of the inductor and the magnitude of the capacity of the resonance inductor capacitor being determined by the resonant frequency within the range of 30 to 150 cycles.

4,553,073

DEFLECTION CONTROL CIRCUIT WITH LEVEL CONVERSION

Takashi Nakamura, and Kazunori Yamaji, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 9, 1982, Ser. No. 356,283
Claims priority, application Japan, Mar. 11, 1981, 56-35075
Int. Cl.⁴ H01J *29/70*
U.S. Cl. 315—370 **21 Claims**



1. Apparatus for supplying adjusted deflecting signals to respective horizontal and vertical deflecting inputs of each of several pickup tubes in a plural pickup tube television camera; comprising:

a source of horizontal and vertical deflecting signals;

means for supplying said horizontal and vertical deflecting signals to respective horizontal and vertical deflecting inputs of a predetermined pickup tube of said camera;

compensating voltage generating circuit means having a plurality of inputs and a plurality of outputs, said inputs receiving said horizontal and vertical deflecting signals, and said compensating voltage generating circuit means being responsive to said horizontal and vertical deflecting signals for generating deflection compensating voltages respectively enabling adjustment of the deflections of selected ones of the pickup tubes of said camera; and

combining circuit means for combining said respective deflection compensating voltages with corresponding ones of said horizontal and vertical deflecting signals to generate adjusted horizontal and vertical deflecting signals for application to the respective horizontal and vertical deflection inputs of said selected pickup tubes;

wherein said compensating voltage generating circuit means has a power input connected to a voltage supply of a first level and said combining circuit means has a power input connected to a voltage supply of a second level of substan-

tially greater magnitude than said first level; and further comprising

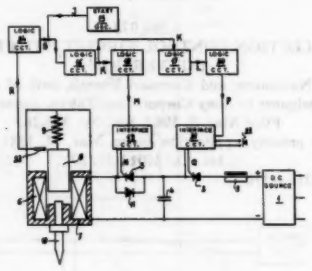
level converting circuit means having an input coupled to an output of said compensating voltage generating circuit means and an output coupled to an input of said combining circuit means for converting the level of the deflection compensating voltage applied thereto from a level corresponding to said first level to a level corresponding to said second level.

4,553,074

METHOD OF AND APPARATUS FOR THE AUTOSYNCHRONIZATION OF AN ELECTROMAGNETIC HAMMER

Georges Jacquemet, Caluire, France, assignor to MARTELEC Societe Civile Particuliere, Caluire, France

Filed Aug. 3, 1983, Ser. No. 520,116
Claims priority, application France, Aug. 3, 1982, 82 13950
Int. Cl.⁴ H02K *33/00*
U.S. Cl. 318—130 **13 Claims**



1. In a method of autosynchronously operating an electromagnetic hammer comprising an electromagnet having a coil within which an elastically suspended plunger armature is displaceable in successive operation cycles by energization of the coil to generate an impact upon the discharge of a condenser under the control of a discharge thyristor through the coil, the condenser being charged from a direct current source through an inductance under the control of a charging thyristor in series with the coil, the improvement which comprises:

generating a command pulse triggering said discharge thyristor at a predetermined interval at least equal to the half period of the natural oscillation frequency of said plunger armature and its elastic suspension after the negative amplitude of the discharge current from the condenser through the coil attains a zero value for the first time in each operating cycle of the hammer so that triggering of the hammer is controlled on an impact-by-impact basis in accordance with its position resulting from a previous triggering.

4,553,075

SIMPLE BRUSHLESS DC FAN MOTOR WITH REVERSING FIELD

Fred A. Brown, and Alan F. Grouse, both of Woodstock, N.Y., assignors to Rotron Incorporated, Woodstock, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,154
Int. Cl.⁴ H02K *29/02*
U.S. Cl. 318—254 **21 Claims**

1. A DC motor comprising:

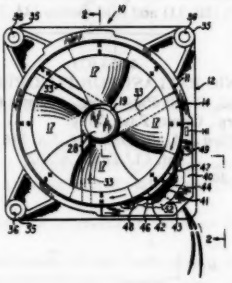
a rotor with an annular permanent magnet defining magnetic segments oppositely polarized in the radial outward direction, wherein said segments are arranged circumferentially to comprise the magnet, and wherein the rotor is free of encircling stator iron;

a stator having an electromagnet structure outside said annular magnet, proximate the periphery thereof, said electromagnet structure including coil means comprising a core having two electrically independent coil windings wound thereon, said electromagnetic structure further including electromagnetic flux conducting means in flux conducting relation to the coils and core and located for establishing magnetic fields of opposite polarities to attract the oppositely polarized segments of, and for applying continuous rotational torque to, the annular magnet; and

position detecting means located outside said annular magnet for detecting the position of the rotor relative to the stator and for commutating electrical current to the coil means to repeatedly produce said opposite polarity fields and attract said segments in dependence on said relative positioning.

16. A DC motor comprising:

a rotor with an annular permanent magnet defining magnetic segments oppositely polarized in the radial outward direction, wherein said segments are arranged circumferentially to comprise the magnet;



a stator having an electromagnet structure outside said annular magnet, proximate the periphery thereof, said electromagnet structure including two electrically independent and concentrically wound coil windings, and wherein the electromagnetic structure defines at least one pole piece and wherein the coil windings are wound on a core in electromagnetic flux conducting relationship to the pole piece and located for establishing magnetic fields of opposite polarities to attract the oppositely polarized segments of, and for applying rotational torque to, the annular magnet; and

position detecting means located outside said annular magnet for detecting the position of the rotor relative to the stator and for commutating electrical current to the coil means to repeatedly produce said opposite polarity fields and attract said segments in dependence on said relative positioning.

4,553,076

IDLE SPEED CONTROLLER IMPROVEMENT

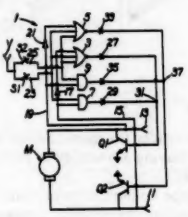
Richard D. Doerr; J. Joseph Muller, both of St. Louis, and William A. Green, St. Charles, all of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Oct. 5, 1984, Ser. No. 657,990
Int. Cl.⁴ H02P *1/22*
U.S. Cl. 318—282 **15 Claims**

6. In a controller for controlling the idle speed of an internal combustion engine, the controller having a reversible d.c. motor, an extendible and retractable member, a first switch which is normally closed but which is opened by movement of the member as it approaches its extreme extended position and a second switch which is normally closed but which is opened by movement of the member as it approaches its extreme

retracted position, the position of the switches relative to each other being such that both switches are closed when the member is at a position intermediate its extreme positions and one switch is closed and the other switch open when the member is at a respective extreme position, the improvement comprising: logic means responsive to the position of the switches and the direction in which the member is to be driven by the motor for energizing the motor to retract the member when the member is at its essentially fully extended position as signified by the first switch being open, the signal provided to the motor to drive he motor indicates the member is to be retracted, and the second switch, which should be closed, is open due to dirt or debris, whereby the member, which otherwise could not be retracted, is retracted.

11. In a controller for controlling the idle speed of an internal combustion engine, the controller having a reversible d.c. motor, an extendible and retractable member, a first switch



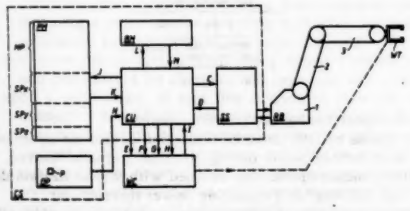
which is normally closed but which is opened by movement of the member as it approaches its extreme extended position and a second switch which is normally closed but which is opened by movement of the member as it approaches its extreme retracted position, the position of the switches relative to each other being such that both switches are closed when the member is at a position intermediate its extreme positions and one switch is closed and the other switch is open when the member is at a respective extreme position, the improvement comprising: logic means responsive to the position of the switches and the direction in which the member is to be driven by the motor for energizing the motor to extend the member when the member is at its essentially fully retracted position as signified by the second switch being open, the signal provided to the motor to drive the motor indicates the member is to be extended and the first switch, which should be closed, is open due to dirt or debris, whereby the member, which otherwise could not be extended, is extended.

4,553,077

INDUSTRIAL ROBOT

Hakan Brantmark, Västerås, and Johan Ennerfelt, Växjö, both of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 29, 1983, Ser. No. 508,976
Claims priority, application Sweden, Jun. 29, 1982, 82040007
Int. Cl.[4] G05B *19/00*
U.S. Cl. 318—568 **4 Claims**



1. In an industrial robot control system for controlling the positioning of a robot to a number of programmed operating positions and the execution of programmed operations in association with these operating positions, the control system comprising:

first control means for positioning, during programming, the robot successively to said operating positions and for storing, at each operating position, information for positioning the robot to that operating position and information for controlling an operation to be carried out in association with that operating position,

first memory means for storing information fed in via the first control means during programming, said information comprising a main program with a sequence of instructions which, during automatic operation of the robot, are successively executed; and

second control means for controlling the robot during automatic operation in accordance with the information stored in said first memory means;

the improvement wherein:

the control system comprises second memory means for storing information defining a sub-program, which contains information for control of one of said operations;

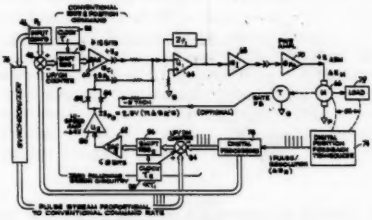
the first control means comprising an operating member arranged, upon a single activation during programming with the robot at an operating position, to cause storage in the first memory means of an instruction which, during automatic operation causes positioning of the robot to that operating position as well as calling for an execution of said sub-program.

4,553,078

SERVO CONTROL BOOSTER SYSTEM FOR MINIMIZING FOLLOWING ERROR

William L. Wise, Mountain View, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 61,114
Int. Cl.[4] G05B *11/18*
U.S. Cl. 318—592 **6 Claims**



1. A closed-loop feedback control system for precisely controlling the instantaneous position of a machine element along an axis for all operational speeds, in accordance with numerical input commands, said system comprising:

a source of numerical input command signals;

first circuit means for producing feedback signals representing the position of said machine element;

first comparing means for comparing the numerical input command signals from said source with the position feedback signals from said first circuit means;

means responsive to said first comparing means for generating first position correction signals being proportional to the difference between said numerical input command signals and said position feedback signals;

means responsive to the said means for generating first position correction signals to generate an amplified signal output for producing motion of said machine element;

synchronizer means responsive to the numerical input command signals from said source for providing a pulse stream command signal having a pulse rate directly proportional to the input command signal;

second comparing means for continually comparing said position feedback signals with said pulse stream command signal and producing a difference signal representing the difference therebetween;

gating means responsive to said difference signal and second comparing means for producing a command correction signal when a predetermined position correction limit is exceeded;

means for combining the numerical input command signals with the command correction signals to produce a composite numerical input command signal representing second position correction signals; and

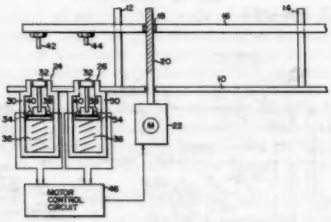
amplifier and motor means responsive to said composite numerical input command signal for driving said machine element along said axis when said predetermined position correction limit is exceeded.

4,553,079

METHOD FOR RETURNING A MOVABLE PART TO THE ORIGINAL POINT

Makoto Igarashi, Tokyo; Naoki Kumagami, Sagamihara, and Kiichiro Okano, Chiba, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,082
Claims priority, application Japan, Apr. 13, 1983, 58-65030
Int. Cl.[4] G05G *5/00*
U.S. Cl. 318—626 **5 Claims**



1. A method for returning a movable part to the original point which comprises:

a first step of moving a movable part in one direction to the original point at a first speed causing the movable part to stop at a point a little beyond the original point;

a second step of moving the movable part in the opposite direction away from the original point at a second speed lower than said first speed for a prescribed length of time causing the movable part to be slightly removed from the original point;

a third step of moving the movable part which has been moved away from said original point for said prescribed length of time to the original point at a third speed lower than said second speed and, thereby stopping the movable part at said original point; and,

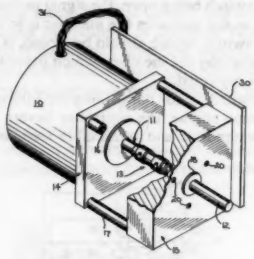
providing an original point switch at the original point and an overrun switch at a point a little beyond the original point such that, in the first step, the movable part continues to move until the movable part contacts the overrun switch, and in the third step, the movable part continues its travel until the movable part contacts the original point switch.

4,553,080

POSITION TRANSDUCER

Lee E. Cannon, Bozeman, Mont.; Peter C. Schmitt, West Bloomfield, Mich., and Dan R. Cheever, Bozeman, Mont., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 25, 1983, Ser. No. 516,742
Int. Cl.[4] H02K *29/04*
U.S. Cl. 318—696 **3 Claims**



1. A position transducer for manual input which comprises:

a stepping motor having a plurality of pairs of windings and a rotatable shaft;

a bias current source connected to provide current to one of said pairs of windings to generate a magnetic detent force which defines increments of stepping motor shaft rotation;

a detector circuit connected to another pair of stepping motor windings and being operable to produce an output signal indicative of the direction of stepping motor shaft rotation each time the shaft is rotated one increment; and

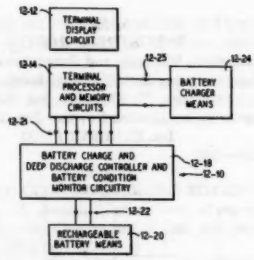
a handwheel shaft which is rotatably supported adjacent to the stepping motor shaft and connected to the stepping motor shaft by means of a flexible coupler to impart rotation to the stepping motor shaft when the handwheel is rotated.

4,553,081

PORTABLE BATTERY POWERED SYSTEM

Steven E. Koenck, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 385,830, Jun. 7, 1982, Pat. No. 4,455,523. This application May 21, 1984, Ser. No. 612,588
Int. Cl.[4] H02J *7/00*
U.S. Cl. 320—43 **30 Claims**


TERMINAL DISPLAY CIRCUIT
TERMINAL PROCESSOR AND MEMORY CIRCUITS
BATTERY CHARGER MEANS
BATTERY CHARGE AND DEEP DISCHARGE CONTROLLER AND BATTERY CONDITION MONITOR CIRCUITRY
RECHARGEABLE BATTERY MEANS

1. In a portable battery powered system,

a portable battery powered utilization device for operating from battery power during portable operation thereof,

battery means operatively coupled with said utilization device for supplying operating power thereto, and

battery conditioning system means operatively coupled with said battery means and comprising battery conditioning means for controlling conditioning of said battery means,

and battery parameter sensing means for sensing battery parameters,

said utilization device together with said battery means and said battery conditioning system means having a size and weight to be carried by an individual person, and

said battery conditioning system means including operating means operatively coupled with said battery conditioning means and controlling conditioning of said battery means in conjunction with said battery parameter sensing means.

4,553,082

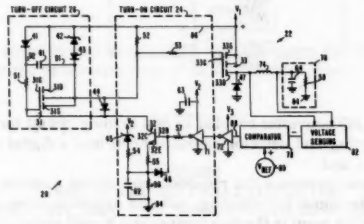
TRANSFORMERLESS DRIVE CIRCUIT FOR FIELD-EFFECT TRANSISTORS

John J. Nesler, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 25, 1984, Ser. No. 614,079

Int. Cl.[4] G05F 1/56

U.S. Cl. 323—288 **10 Claims**



1. A drive circuit for operating an electronic switch having a control terminal for receipt of a control signal, said switch being in circuit with a device utilizing current switched by said switch, said switch being connected between a supply terminal of a source of power and said utilization device which is connected to a return terminal of said power source, said switch conducting current upon a first voltage of said control signal and terminating the current upon a second and different voltage of said control signal, said drive circuit comprising:

a turn-on circuit coupled between said supply and said return terminals of said power source and connecting with said control terminal, said turn-on circuit including a first transistor and a switching means coupled in a series circuit between said control terminal and said return terminal of said power source, said first transistor being responsive to an input signal applied thereto initiating a first current in said series circuit to produce said first voltage of control signal, said switching means being connected between said control terminal and said first transistor;

a turn-off circuit connected with said first switching means and being coupled in circuit with said supply terminal of said power source, said turn-off circuit comprising a second transistor in circuit with said control terminal for initiating a second current in the reverse direction of said first current to produce said second voltage of said control circuit;

said turn-off circuit further comprising a capacitive circuit connected to said second transistor, said capacitive circuit including a capacitor for powering said second transistor subsequent to a charging of the capacitor; and

said drive circuit further comprising means responsive to said first current for charging said capacitor; and wherein

upon a termination of said first current in response to a change of state of said input signal, said switching means operates to permit said capacitor to apply a voltage and a current to said second transistor resulting in said second current and in saturation of said second transistor, said second current flowing via said second transistor from the supply terminal of said power supply to said control terminal of said switch, said saturation raising the voltage of the control signal to a magnitude substantially equal to that of the voltage of said power supply for turning off said electronic switch.

4,553,083

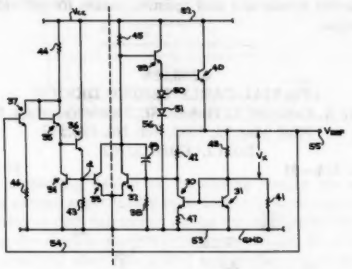
BANDGAP REFERENCE VOLTAGE GENERATOR WITH V_{CC} COMPENSATION

Tsen-Shau Yang, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1983, Ser. No. 556,770

Int. Cl.[4] G05F 3/20

U.S. Cl. 323—313 **8 Claims**



1. In a bandgap reference voltage generator for producing a stable reference voltage, V_{REF}, in an integrated circuit, including parallel current paths, a means for supplying current through the parallel paths and a self-regulating means for establishing a V_{REF} voltage, the improvement comprising:

compensation circuitry to render the operation of the bandgap reference voltage generator independent of the supply voltage, V_{CC}, said compensation circuitry providing compensating terms of opposite sign for a V_{CC} dependent term in one of the network equations which describe the operation of the bandgap reference voltage generator, wherein said one network equation is given by $V_{REF}=V_{R42}+V_{BE32}$, where V_{R42}=voltage across a resistor **42** and V_{BE32}=Base-emitter voltage of a transistor **32**, and wherein V_{BE32} is said V_{CC} dependent term, said compensation circuitry including feedback means connected to the ends of said parallel current paths to assist in controlling the conductance of said compensation circuitry as changes in supply voltage, V_{CC}, occur.

4,553,084

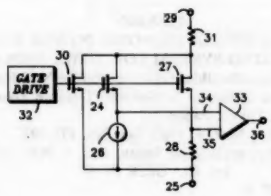
CURRENT SENSING CIRCUIT

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1984, Ser. No. 595,764

Int. Cl.[4] G05F 3/16

U.S. Cl. 323—316 **8 Claims**



1. A current sensing circuit coupled between a load having a load current passing therethrough and a supply voltage terminal, comprising:

a first current means coupled between said load and said supply voltage terminal for carrying a first portion of said load current;

resistive means coupled to said supply voltage terminal for providing a voltage drop;

second current means coupled between said load and said resistive means for carrying a second portion of said load current, said first portion being substantially larger than said second portion;

control means coupled to said first current means and said second current means for biasing said first current means and said second current means;

output means coupled to a first node between said second current means and said resistive means for providing an output.

4,553,085

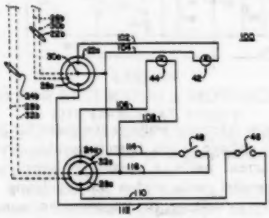
COAXIAL CABLE TESTER DEVICE

Domenic A. Canzano, 32 Hobson St., Lawrence, Mass. 01841

Filed May 13, 1983, Ser. No. 494,377

Int. Cl.[4] G01R *31/02*

U.S. Cl. 324—51 **10 Claims**



1. A coaxial cable tester device comprising:

a transmitter unit including first and second coaxial connectors, each having a center conductor and a ground conductor; means for isolating the ground conductors of said first and second connectors from each other; a power supply having first and second terminals, one connected to said center conductors and the other to said ground conductor of said first connector; and a short indicator circuit connected across said terminals, said short indicator circuit including a short switch and an indicator device in series;

a receiver unit including third and fourth coaxial connectors, each having a center conductor and a ground conductor; means for isolating the ground conductors of said third and fourth connectors; a first switch connected between said ground conductors of said third and fourth connectors; a second switch connected between said center conductors of said third and fourth connectors; first indicator means connected between the center and ground conductors of said third connector; and second indicator means connected between the center and ground conductors of said fourth connector.

4,553,086

CARRIER POWER TO NOISE POWER RATIO MEASURING SYSTEM FOR TDMA SIGNALS

Tatsuo Watanabe; Michihisa Ohkawa, and Toshio Mizuno, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,292

Claims priority, application Japan, Apr. 2, 1982, 57-53921

Int. Cl.[4] G01R *27/00*

U.S. Cl. 324—57 N **2 Claims**

1. A system for measuring the carrier power to noise power ratio in a noise-containing TDMA signal, which comprises:

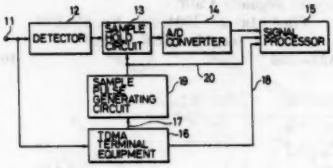
a detector for detecting said TDMA signal,

means for detecting a unique word in said TDMA signal and operative to supply a detection pulse in response to the unique word in the reference burst portion of said signal and a further detection pulse in response to the unique word in a data burst portion of said signal,

means for predicting an unmodulated carrier wave of the preamble portion of said TDMA signal based on the output timing of said detection pulse of the unique word in the reference burst portion of said signal and operative to generate a pulse signal for sampling said unmodulated carrier wave,

means disposed after said detector for sampling the output signal of said detector based on said pulse signal for sampling,

a circuit for holding the detector output samples,



an A/D converter coupled to said holding circuit for converting said detector output samples into a digital quantity, and

a signal processor for receiving said digital quantity, said pulse signal for sampling, and said detection pulse of the unique word in the data burst as inputs, said signal processor being operative to nullify said A/D converter output whenever the deviation of the input timing between said pulse signal for sampling and said detection pulse of the unique word in the data burst exceeds a prescribed tolerance, said signal processor being further operative to find at least one of the squared average value, the average value, and the dispersion of the A/D converter output, and to calculate the carrier power to noise power ratio based on said value.

4,553,087

METHOD AND APPARATUS FOR DETERMINING THE PENETRATION AND LEACHING PROCESS OF CONDUCTIVE PHASES

Wilhelm Kühn, and Claus Bunnenberg, both of Hanover, Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen- und Umweltforschung mbH, München, Neuherberg bei München, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,825

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139835

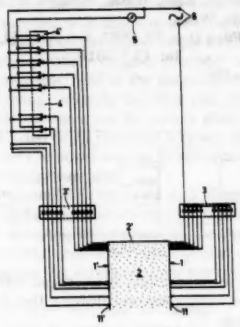
Int. Cl.[4] G01N *5/02, 25/56;* G01R *27/02*

U.S. Cl. 324—65 P **11 Claims**

1. Method for the nondestructive determination of the penetration and leaching process of conductive phases in materials, comprising measuring the conductivity of the material to be examined in thin superposed layers from the penetration surface by:

providing a respective pattern, of thin parallel conductors on each of two opposite side surfaces of the material to be examined to produce pairs of oppositely disposed conductors with each pair being associated with one of said layers; simultaneously applying a voltage across each of said pairs of oppositely disposed conductors to cause current to flow between the conductors of each pair through separate layers of said material; and separately measuring the current flowing through each pair of oppo-

sitely disposed conductors to determine the current through the individual layers, whereby an increase of the



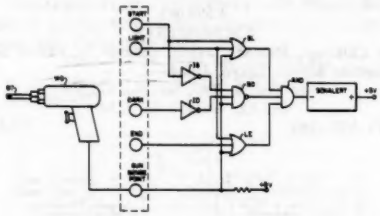
current in increasingly deep layers indicates the advance of the penetration front of the conductive phase.

4,553,088

WIRING PAIR REVERSAL DETECTOR

Kenneth R. Fox, Berwyn, Ill., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 19, 1983, Ser. No. 562,645
Int. Cl.[4] G01R *19/00*
U.S. Cl. 324—66 **8 Claims**



1. Alarm apparatus for use with a numerical control wire wrap gun wiring machine that mechanically indicates the position for a wire placement and visually indicates by indicator lights the first or second end and light or dark wire of a pair of wires that is to be wired onto the indicated terminal comprising:

a gun sense point terminal on said wire wrap gun;

audible alarm means;

a first gate means having an output and including a first input from said first indicator light means, a second input from said light indicator light means and a third input from said wire wrap gun sense point;

means connecting said first gate output to said audible alarm means;

said inputs from said indicator lights normally having a logic high level except when operated when they have a logic low level signal;

said wire wrap gun sense point normally biased to a logic high level;

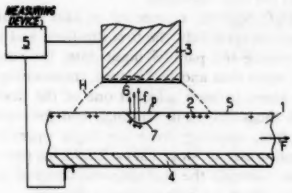
said first gate means operated to activate said audible alarm means upon said gun sense point placing a wire on a grounded terminal.

4,553,089

DEVICES DESIGNED TO MEASURE LOCALLY THE ELECTRIC CHARGES CARRIED BY DIELECTRICS

Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint Cloud, and Georges Charpak, 14, rue du Clos, Geneve, both of France

Filed Mar. 17, 1983, Ser. No. 476,195
Claims priority, application France, Mar. 17, 1982, 82 04545
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—71.1 **10 Claims**



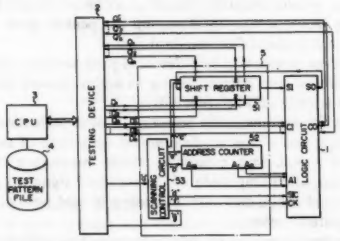
1. A measuring device for measuring locally the electric charges carried superficially by a dielectric sheet, said device comprising a first electrode, facing the surface of the sheet carrying the electric charges to be measured and constituting a probe, a second electrode placed against the side of the sheet opposite to the surface of said sheet carrying the electric charges, means for providing a relative displacement of the probe along the sheet, means for measuring at each instant of time the charges induced on the probe by the charges to be measured, and means for deforming the sheet, during very short time periods, at a spot p the size of which is very small relative to that of the probe and the surface, and is on the order of the required spatial resolution and which is fixed in position relative to the probe and the surface in directions parallel to the surface, the sheet being deformed in a way such that only the spot p is concerned with this deformation, and the sheet being repeatedly deformed at a frequency f_o large enough, in relationship to the speed of the relative displacement of the sheet with respect to the probe, that sequential deformations of different spots p overlap at least partially.

4,553,090

METHOD AND APPARATUS FOR TESTING A LOGIC CIRCUIT USING PARALLEL TO SERIAL AND SERIAL TO PARALLEL CONVERSION

Yoshinori Hatano, Tokyo; Kiyoshi Wada, Kawasaki, and Ichiro Midorikawa, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,273
Claims priority, application Japan, Jul. 26, 1979, 54-94198
Int. Cl.[4] G01R *15/12*
U.S. Cl. 324—73 AT **6 Claims**



2. A device for testing a logic circuit, operatively connected to receive input data, having a scanning-in terminal and a scanning-out terminal, having a plurality of first flip-flops

associated with a scanning path between the scanning-in and scanning-out terminals, and having a combination circuit including logic gates for performing a logic operation and for providing output data to the first flip-flops, said device comprising:

means for providing the input data in parallel;

addressing means, operatively connected to th first flip-flops, for supplying an address to sequentially select each of the first flip-flops so as to output the output data provided to the first flip-flops;

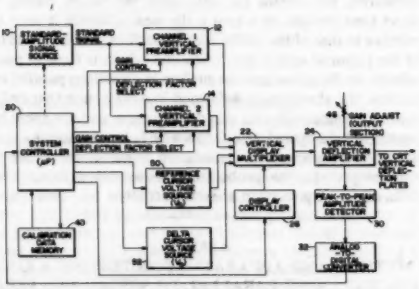
a single shift register, connected to said scanning-in and scanning-out terminals, the first flip-flops and said means for providing the parallel input data, for receiving the parallel input data and for, in turn, transmitting the input data in series to each selected one of the first flip-flops through the scanning-in terminal, and for receiving the output data, resulting from the logic operation of the combination circuit, stored in each selected one of the first flip-flops, through the scanning-out terminal and for, in turn, outputting the output data in parallel.

4,553,091

AUTOMATIC VERTICAL CALIBRATION METHOD AND SYSTEM FOR AN OSCILLOSCOPE

L. Rodney Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 7, 1983, Ser. No. 464,285
Int. Cl.⁴ G01R *35/00, 13/30*
U.S. Cl. 324—74 **13 Claims**



4. A system for calibrating the vertical deflection system of an oscilloscope, comprising:

means for applying a standard-amplitude signal to the input preamplifier of said oscilloscope, said preamplifier having a plurality of selectable deflection factor settings and a controllable gain stage;

means for measuring the amplitude of said standard signal after preamplification thereof at a first preselected deflection factor setting by detecting the peak-to-peak voltage of said preamplified standard signal;

means for converting said detected peak-to-peak voltage to reference data corresponding to said measured amplitude and storing said reference data;

means for automatically selecting a new deflection factor setting and a new predetermined amplitude of said standard signal, said measuring means measuring the new preamplified amplitude of the standard signal to provide new reference data corresponding to said new measured amplitude value;

means for comparing the new reference data with the stored reference data and developing a gain control signal therefrom; and

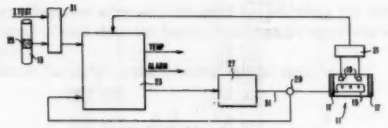
means for applying said gain control signal to said preamplifier to control the gain thereof.

4,553,092

APPARATUS AND METHOD FOR TEMPERATURE ESTIMATION OF OVERHEAD CONDUCTORS

Robert B. Purves, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1982, Ser. No. 451,433
Int. Cl.⁴ G01R *5/22*
U.S. Cl. 324—106 **12 Claims**



1. A device for monitoring an overhead high voltage power line conductor having current flowing therethrough, the device comprising:

a simulation conductor positioned in the same ambient conditions as the overhead conductor to be monitored;

means for heating said simulation conductor;

means responsive to a signal representative of the actual value of the current flowing through the overhead conductor, and representative of the temperature of the simulation conductor, for calculating the electrical resistivity of said overhead conductor and for selectively supplying power to said heating means to generate heat in said simulation conductor equal to the heat dissipated in the overhead conductor;

means for sensing the actual temperature of said simulation conductor; and

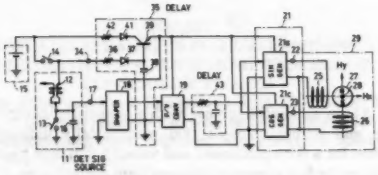
means for indicating if said temperature of said simulation conductor exceeds a predetermined temperature.

4,553,093

TACHOMETER

Hideo Chikasue, Shimada, Japan, assignor to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,504
Int. Cl.⁴ G01P *3/48, 3/54*
U.S. Cl. 324—169 **7 Claims**



1. A tachometer comprising:

a detection signal source operative to generate a detection signal having a frequency corresponding to a rotational frequency to be measured;

a frequency-voltage converter coupled to said detection signal source, for converting said detection signal into a voltage signal having a voltage value corresponding to said frequency;

a sine-cosine current generator connected to said frequency-voltage converter for generating a sine-wave current signal having a substantially sine value corresponding to the voltage value of said voltage signal and for generating a cosine-wave current signal having a substantially cosine value corresponding to the voltage value of said voltage signal, one cycle of each of the sine-wave and cosine-wave current signals corresponding to the range from minimum to maximum voltage values of said voltage signal;

a cross-coil type indicator comprising first and second coils connected to the output side of said sine-cosine current generator, said coils being disposed with their axes substantially perpendicular intersecting each other and said coils being supplied with said sine-wave current signal and said cosine-wave current signal, respectively, said indicator including a rotary magnet rotatably disposed in a composite magnetic field of the magnetic fields set up by currents flowing through the first and second coils, a pointer being mounted on the rotary shaft of the rotary magnet and a dial being provided adjacent said pointer for indicating the rotational angular position of the pointer as a rotational frequency; and

delay means connected between said frequency-voltage converter, said sine-cosine current generator and a power source, for delaying interruption of the operation of the frequency-voltage converter and the sine-cosine current generator when the supply of their operating voltages is cut off;

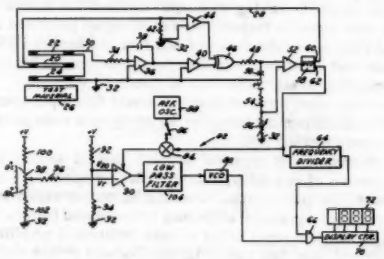
said cross-coil type indicator including a square-shaped frame of a synthetic resinous material in which said rotary magnet is mounted and on which said first and second coils are wound with their axes perpendicular to said rotary shaft of said rotary magnet, said frame having a plurality of depressions formed in one outer face thereof and arranged around said rotary shaft, and a zero-resetting magnet fitted in one of said depressions in opposing relation to a marginal portion of said rotary magnet so that when said pointer is brought near to a zero-point of said dial, said zero-resetting magnet magnetically interacts with said rotary magnet to force said pointer to move to said zero-point.

4,553,094

METHOD AND APPARATUS FOR MEASURING CONDUCTIVITY USING EDDY CURRENTS WITH TEMPERATURE COMPENSATION FEATURE

Robert E. Gehrke, Wixom, Mich., assignor to K. J. Law Engineers, Inc., Farmington Hills, Mich.

Filed Jun. 20, 1983, Ser. No. 505,881
Int. Cl.⁴ G01R *33/12*; G01N *27/72*
U.S. Cl. 324—225 **17 Claims**



14. Apparatus for determining conductivity of test alloy materials having a preselected non-ferrous base metal comprising means for inducing eddy currents in a test material at a measurement temperature and developing a first signal which varies as a function of conductivity of the test material at said measurement temperature,

means for developing a second signal which varies as a function of said measurement temperature,

means for providing a third signal as a function of a predetermined conductivity characteristic of the test material,

means for providing a fourth signal as a function of the product of said first, second and third signals, and

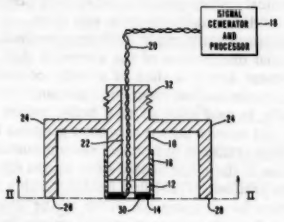
means for determining conductivity of the test material as a combined function of said first and said fourth signals.

4,553,095

EDDY CURRENT THICKNESS GAUGE WITH CONSTANT MAGNETIC BIAS

Harold L. Schenk, Jr., and Warren R. Junker, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,051
Int. Cl.⁴ G01B *7/10*; G01R *33/12*
U.S. Cl. 324—230 **13 Claims**



1. A probe for measuring the thickness of a layer containing small quantities of ferromagnetic material clad on a ferromagnetic base, said probe comprising:

an air core measuring coil;

said measuring coil having an electrical characteristic being variable as a function of the magnetic conductivity of said base; and

means for producing a constant magnetic field, said magnetic field being of sufficient strength to substantially magnetically saturate said small quantities of ferromagnetic material in a layer being measured, thereby substantially eliminating any influence of the magnetic conductivity of said layer on said electrical characteristic of said measuring coil, and said magnetic field being of insufficient strength to magnetically saturate said base;

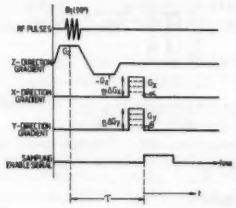
wherein said measuring coil is disposed between said layer and said means for producing a constant magnetic field.

4,553,096

NUCLEAR MAGNETIC RESONANCE METHOD AND APPARATUS

Christopher P. Randell, London, England, assignor to Picker International Limited, Wembley, England

Filed Jul. 19, 1983, Ser. No. 515,356
Claims priority, application United Kingdom, Jul. 28, 1982, 8221852
Int. Cl.⁴ G01R *33/08*
U.S. Cl. 324—309 **6 Claims**



1. A method of determining the spatial distribution of the chemical shift spectra of a chosen element across a slice of a body comprising: exciting nuclear magnetic resonance for said element preferentially in said slice of said body; applying first and second pulsed magnetic gradient fields having magnetic field gradients in first and second mutually orthogonal directions in the plane of said slice to produce phase dispersion in

said resonance along said first and second directions respectively; stepping the value of the gradient of said first field through a range of first values, for each of said first values stepping the value of the gradient of said second field through a range of second values and measuring the free induction decay signal after each set of one first and second field pulses to form a set of free induction decay signals; subjecting said set of signals to a two dimensional Fourier Transform process with respect to said first and second directions, and to an additional Fourier Transform process with respect to time to obtain chemical shift spectra for said chosen element at each of a plurality of different locations in said slice.

5. An apparatus arranged to perform a method of determining the spatial distribution of the chemical shift spectra of a chosen element across a slice of a body comprising: means arranged to excite nuclear magnetic resonance for said element preferentially in said slice of said body; means arranged to apply first and second pulsed magnetic gradient fields having magnetic field gradients in first and second mutually orthogonal directions in the plane of said slice; means for stepping the value of the gradient of said first field through a range of first values; means for stepping the value of the gradient of said second field through a range of second values for each of said first values; means for measuring the free induction decay signal after each set of one first and second field pulses to form a set of free induction decay signals; and means for subjecting said set of signals to a two dimensional Fourier Transform process with respect to said first and second directions, and to an additional Fourier Transform process with respect to time.

4,553,097

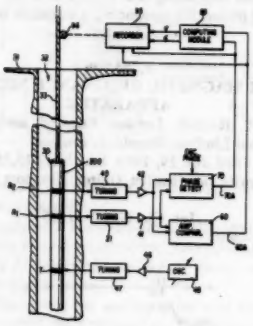
WELL LOGGING APPARATUS AND METHOD USING TRANSVERSE MAGNETIC MODE

Brian Clark, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,571

Int. Cl.⁴ G01V *3/30*; G01F *9/30*

U.S. Cl. 324—338 **54 Claims**



1. Apparatus for investigating properties of earth formations surrounding a borehole, comprising:

a logging device moveable through the borehole, said device including a generally tubular electrically conductive body portion;

energizing means;

transmitting antenna means, mounted on said logging device and coupled to said energizing means, for generating electromagnetic energy, guided by said conductive body portion and having primarily transverse magnetic mode components with respect to said conductive body portion, a portion of said energy passing through said formations;

receiving antenna means, mounted on said logging device in spaced relation to said transmitting antenna means, for receiving the transmitted electromagnetic energy, said receiving antenna means being adapted to have primarily sensitivity to the transverse magnetic mode components of electromagnetic energy, the received signal being indicative of properties of said formations.

4,553,098

BATTERY CHECKER

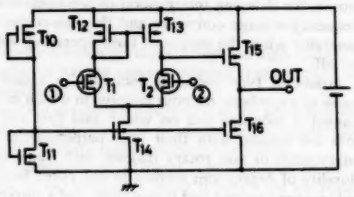
Kanji Yoh, Kokubunji, and Osamu Yamashiro, Omiya, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 10,961, Feb. 9, 1979, abandoned. This application Apr. 12, 1983, Ser. No. 484,263

Claims priority, application Japan, Apr. 5, 1978, 53-39242; Sep. 13, 1978, 53-111722

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 324—433 **16 Claims**



1. A battery checker for checking a battery voltage comprising:

a differential amplifier comprising a differential amplifier stage which is comprised of first and second insulated gate field-effect transistors (IGFETs) and a current source which is commonly coupled to sources of said first and second IGFETs, said first and second IGFETs having a difference of thresholds voltages corresponding to a difference of Fermi levels of gate electrodes thereof, both said gate electrodes of said first and second IGFETs being made of an identical semiconductor material and different from each other in the conductivity types of the identical semiconductor material, a gate of said first IGFET being used as a first input terminal of said differential amplifier while a gate of said second IGFET is used as a second input terminal of said differential amplifier, said differential amplifier having an output terminal for deriving an output signal in response to a drain signal produced from at least one of the drains of said first and second IGFET, and said differential amplifier having an input offset corresponding to said difference of threshold voltages;

a voltage input terminal coupled to said first input terminal of said differential amplifier for applying a voltage of the battery thereto; and

a reference input terminal coupled to said second input terminal of said differential amplifier for applying a reference potential thereto, whereby an output signal in response to a potential difference between said battery voltage and said input offset of said differential amplifier is derived from said output terminal of said differential amplifier.

4,553,099

ELECTROSTATIC VOLTAGE SENSOR

Yukio Kasahara; Ritsuo Inaba, both of Hirakata, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 8, 1982, Ser. No. 356,145

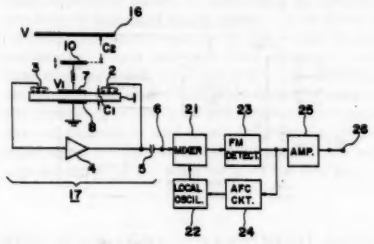
Claims priority, application Japan, Mar. 6, 1981, 56-32979; Apr. 7, 1981, 56-52725; Apr. 7, 1981, 56-52726

Int. Cl.⁴ G01R *29/12*

U.S. Cl. 324—458 **5 Claims**

1. An electrostatic voltage sensor which comprises at least a surface acoustic wave propagating medium composed of a piezo-electric material, said piezo-electric material being sub-

stantially an insulator, a pair of transmitting and receiving transducer means for transmitting and receiving a surface acoustic wave provided on said surface acoustic wave propagating medium, an oscillating means including an amplifier having its input terminal connected to said receiving transducer means and having its output terminal connected to said transmitting transducer means, an electrode means for applying an electric field in a direction perpendicular to a major surface of said medium on which said surface acoustic wave propagates, and a voltage collecting member disposed in the



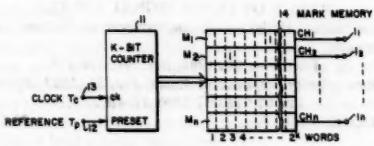
vicinity of an object whose voltage is to be measured and connected to said electrode means, a voltage varying means for varying a voltage which is supplied to said electrode means from said voltage collecting member at a predetermined constant frequency, and a voltage detecting means for detecting said voltage of said object whose voltage is to be measured by detecting an output frequency of said oscillating means, wherein said voltage detecting means includes a mixing circuit whose input is connected to said receiving transducer, a frequency modulation detecting circuit which is connected to an output of said mixing circuit, and a local oscillation circuit.

4,553,100

COUNTER-ADDRESS MEMORY FOR MULTI-CHANNEL TIMING SIGNALS

Junji Nishiura, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Gyoda, Japan

Filed Jun. 7, 1983, Ser. No. 501,864
Claims priority, application Japan, Jun. 7, 1982, 57-97415
Int. Cl.⁴ H03L *7/24*
U.S. Cl. 328—63 **22 Claims**



1. A device for generating timing signals corresponding to reference signals and clock signals, comprising

counting means for being preset by each said reference signal, for counting the clock signals which occur after each said reference signal, and for outputting the count value,

memory means for storing marks in addresses corresponding to delay times of said timing signals with respect to said reference signals, and

means for synchronizing said timing signals with said clock signals,

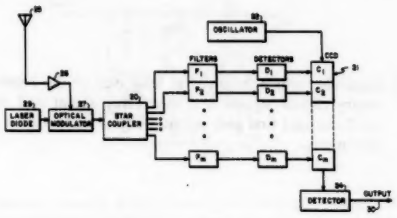
wherein said count value of said counting means is used to access the addresses of said memory means so that said marks are provided from said memory as said timing signals, said timing signals are provided on a plurality of channels, said memory means includes a corresponding plurality of channels, each said channel of said memory has the same set of addresses to be accessed by the count value of said counting means, and said marks are selectively stored in the addresses of said channels in correspondence to the desired timing signals to be output from each of said channels.

4,553,101

FAST FREQUENCY HOPPING DEMODULATION SYSTEM WITH SERIAL ACCUMULATION OF SIGNAL

Ronald F. Mathis, San Diego, Calif., assignor to General Dynamis Electronics Division, San Diego, Calif.

Filed Sep. 21, 1983, Ser. No. 525,162
Int. Cl.⁴ H03D *3/18, 3/00;* **H03K** *17/296*
U.S. Cl. 329—50 **22 Claims**



1. A system for demodulating a received signal containing repetitive blocks of m frequency hopped pulses having a predetermined hopping sequence, where "m" is an integer greater than one, comprising

m filters respectively tuned to the frequencies of said predetermined hopping sequence;

means for distributing said received signal to all m filters in parallel; and

means for integrating the output signals from said filters over intervals each corresponding to a respective one of said blocks of pulses, said integrating means comprises

a signal accumulator having a series of cells respectively coupled to different filters, wherein signals are accumulated in the cells from the filters at the integer-multiple of the hop rate and accumulated signals progress serially from cell to cell at the integer-multiple of the hop rate to provide a serial output from an end cell, and means for detecting when the serial output of the accumulator exceeds a predetermined threshold to determine the arrival of each block.

4,553,102

MULTILEVEL AMPLITUDE MODULATION DEMODULATOR WITH DC DRIFT COMPENSATION

Yasuharu Yoshida, Tokyo, Japan, assignor to NEC Corp., Tokyo, Japan

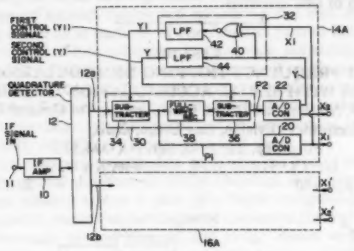
Filed Jul. 23, 1984, Ser. No. 633,315
Claims priority, application Japan, Jul. 22, 1983, 58-134119; Jul. 22, 1983, 58-134120
Int. Cl.⁴ H03D *1/06*
U.S. Cl. 329—133 **11 Claims**

1. A demodulator for a multilevel amplitude modulation system, said demodulator comprising a discriminator which receives demodulated multilevel baseband signals and recovers a plurality of binary digital signals according to a plurality of discriminating levels, said discriminator including:

a full-wave rectifying section which receives said multilevel baseband signals and produces first and second outputs, said first output being controlled by a first control signal with respect to the DC components thereof, said second output being full-wave rectified and controlled by a second control signal with respect to the DC components thereof;

an analog-to-digital converting means which receives said

first and second outputs and produces the recovered binary digital signals and an error signal; and



a controller which receives at least one of the recovered binary digital signals and said error signal and which produces said first and second control signals after logic operations.

4,553,103

RC-ACTIVE FILTERS

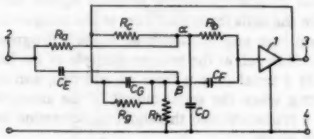
John M. Rollett, Suffolk, England, assignor to British Telecommunications, London, England

Filed Jun. 27, 1983, Ser. No. 508,187

Claims priority, application United Kingdom, Jun. 29, 1982, 8218770

Int. Cl.⁴ H03F *1/34*

U.S. Cl. 330—107 **18 Claims**



1. A second-order filter section comprising:

a single high-gain, high input impedance, inverting amplifier with low output impedance whose output terminal provides the output terminal of the section,

an input terminal, and

a twin-tee network, comprising resistance and capacitance elements and having:

a first resistance element (R_a),

a first capacitance element (C_E),

a first node (α) connected to the inverting input of the amplifier via a second resistance element (R_b), to the output terminal of the amplifier via a third resistance element (R_c), and to circuit ground via a second capacitance element (C_D); and

a second node (β) connected to the inverting input of the amplifier via a third capacitance element (C_F), to the output terminal of the amplifier via the parallel combination of a fourth capacitance element (C_G) and a fourth resistance element (R_g), and to circuit ground via a fifth resistance element (R_h),

the input terminal being connected to the first node (α) via the first resistance element (R_a) and to the second node (β) via the first capacitance (C_E).

4,553,104

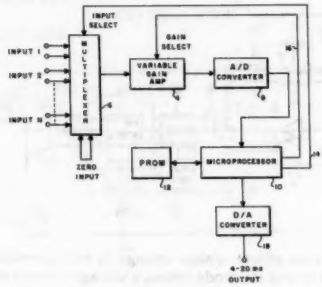
METHOD OF COMPENSATING AN AMPLIFIER SYSTEM HAVING A VARIABLE GAIN AMPLIFIER TO ACHIEVE A CONSTANT OVERALL SYSTEM SIGNAL GAIN AND AN APPARATUS UTILIZING THE SAME

Arthur M. Olsen, Pennsburg, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1984, Ser. No. 585,048

Int. Cl.⁴ H03G *3/20*

U.S. Cl. 330—129 **10 Claims**



4. A signal amplifier system comprising

analog-to-digital converter means for converting an analog input signal into a digital equivalent, said converter means having a plurality of selectable signal gains for correspondingly amplifying the analog input signal,

a non-volatile memory for storing data on the available signal gains of said converter means and on a desired overall signal gain of the amplifier system, and

digital computer means connected to said converter means and said memory for computing a digital output signal from said amplifier system representative of the analog input signal in accordance with the overall predetermined system signal gain and a control signal for selecting a signal gain of said converter means to maintain the overall predetermined system signal gain.

4,553,105

MULTISTAGE LINEAR AMPLIFIER FOR A WIDE RANGE OF INPUT SIGNAL LEVELS

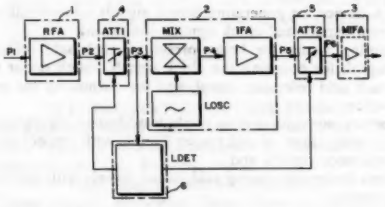
Susumu Sasaki, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 30, 1984, Ser. No. 575,275

Claims priority, application Japan, Jan. 31, 1983, 58-14407

Int. Cl.⁴ H03G *7/06*; H04B *7/08*

U.S. Cl. 330—145 **21 Claims**



1. A multistage linear amplifier, operatively connected to receive an input signal having a first level which varies over a wide range, comprising:

first stage amplifying means, operatively connected to receive the input signal, for linearly amplifying the input

signal to produce a first amplified signal having a second level;

level compressor means, operatively connected to said first stage amplifying means, for compressing the second level to produce a compressed signal having a third level;

interstage amplifying means, operatively connected to said level compressor means, for amplifying the compressed signal to produce a second amplified signal having a fourth level;

level expander means, operatively connected to said interstage amplifying means, for expanding the fourth level to produce an expanded signal having a fifth level; and

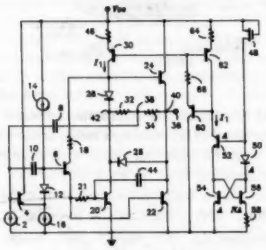
level detecting means, operatively connected to said level compressor means and said level expander means, for detecting the third level and for controlling said level compressor means and said level expander means so that the expanding of said level expander means complements the compressing of said level compressor means and the input signal is amplified linearly to produce the expanded signal over all of the wide range of the first level.

4,553,106

OUTPUT STAGE FOR AN OPERATIONAL AMPLIFIER

Robert L. Vyne, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 26, 1984, Ser. No. 593,165
Int. Cl.[4] H03F *3/30, 1/30*
U.S. Cl. 330—272 **4 Claims**



1. An operational amplifier for providing load current to an output terminal comprising:

an input stage;

an output stage including first, second and third NPN output transistors each having base, emitter and collector terminals, said first NPN output transistor having an emitter coupled to said output terminal for conducting load current thereto and said second and third NPN output transistors having collectors coupled to said output terminal for sinking load current therefrom;

at least a first emitter follower transistor coupled between the output of said input stage and the base of said second PNP output transistor; and

a current source coupled to said output stage for supplying a thermal current thereto, said thermal current having a positive temperature coefficient.

4,553,107

CURRENT MIRROR CIRCUIT HAVING STABILIZED OUTPUT CURRENT

Atsushi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 2, 1983, Ser. No. 557,254
Claims priority, application Japan, Dec. 3, 1982, 57-212152
Int. Cl.[4] H03F *3/68*
U.S. Cl. 330—288 **9 Claims**

1. A current mirror circuit responsive to a current input comprising:

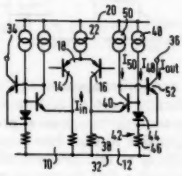
a first impedance path connected to said current input to receive an input current;

a first transistor whose emitter is connected to a junction of said first impedance path and said current input;

means for providing a voltage offset equivalent to the base-emitter voltage of said first transistor connected to the base of said first transistor;

a second impedance path connected in series with said voltage offset providing means;

a first current source connected to the collector of said first transistor for producing a first current of substantially constant value;



a second current source connected to said voltage offset providing means for producing a second current of substantially constant value; and

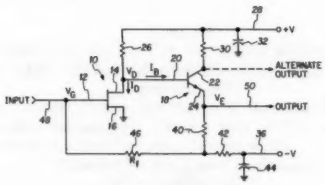
a second transistor whose base is connected to the collector of said first transistor, whose collector is connected to a current output, and whose emitter is connected solely and directly to the junction of said voltage offset providing means and said second impedance path for producing a feedback loop to output a collector current which is substantially linearly related to said current input.

4,553,108

LOW NOISE FEEDBACK AMPLIFIER

James P. Young, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 9, 1983, Ser. No. 550,271
Int. Cl.[4] H03F *3/16*
U.S. Cl. 330—300 **5 Claims**



1. A feedback signal amplifier consisting of:

a gallium arsenide field effect transistor having gate, source and drain electrodes;

a bipolar transistor having base, collector and emitter electrodes, said drain electrode of said field effect transistor being directly connected to said base electrode of said bipolar transistor;

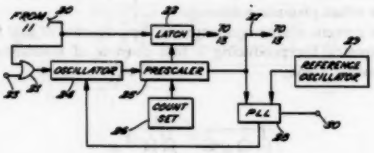
means for providing a feedback from the emitter of said bipolar transistor to the gate of said field effect transistor; and

means for biasing said field effect transistor and said bipolar transistor for operation in a signal amplifying range.

4,553,109
DIGITAL DATA ACQUISITION APPARATUS

James R. Hyatt, Madison, Wis., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Jan. 3, 1984, Ser. No. 567,927
Int. Cl.[4] H03L 7/00
U.S. Cl. 331—25 15 Claims

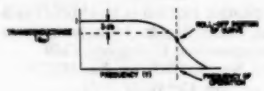


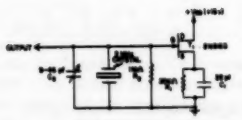
1. In digital data acquistion apparatus of the type wherein a waveform is periodically sampled and having means for providing periodic data acquisition signals at predetermined intervals and means responsive to said data acquisition signals for sampling said waveform at said predetermined intervals, the apparatus having at least a first operation mode wherein said sampling is initiated on the occurrence of a trigger event, the improvement for increasing the effective sample rate of the apparatus wherein said data acquisition signals providing means is initiated, in said first operation mode, by said trigger event and including means for generating a first data acquisition signal at an interval after a trigger event that is shorter than said predetermined intervals and for generating subsequent data acquisition signals at said predetermined intervals.

4,553,110
JFET REFLECTION OSCILLATOR

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,240
Int. Cl.[4] H03B 5/12, 5/36
U.S. Cl. 331—116 FE 11 Claims



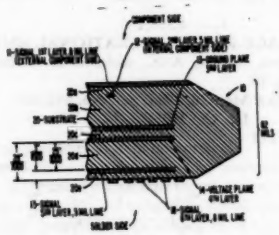


6. An oscillator circuit comprising:
a network including a resistor in parallel with a capacitor;
a field effect transistor having a source, a drain and a gate, said source being connectable to one side of a power supply through said network and said drain being connectable to the other side of the power supply;
a tuned circuit connected to said gate; and
said field effect transistor operating in the roll-off portion of its transconductance versus frequency curve, its operating point frequency on said curve being established by said tuned circuit and capacitance reflected from the source to the gate.

4,553,111
PRINTED CIRCUIT BOARD MAXIMIZING AREAS FOR COMPONENT UTILIZATION

Michael Barrow, Laguna Hills, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 30, 1983, Ser. No. 527,841
Int. Cl.[4] H01P 5/00
U.S. Cl. 333—1 5 Claims



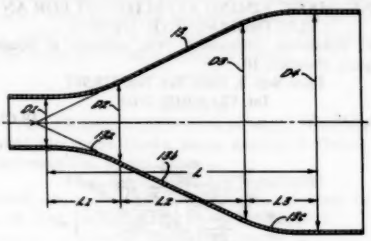
1. A method for enhancing component density and component interconnectability by making a multi-layer printed circuit board of less than 69 mils thickness with multiple layers of microstrip transmission lines on each side of two central conductive planes, where each microstrip transmission line provides a 100 ohm±10% characteristic impedance and enables maximum connectivity per square unit surface area, for mounted components, including the steps of:
(a) separating two conductive copper planes by a central dieletric substrate of from 1–5 mils thickness having a dielectric constant of 4.2–5.0 to form an upper central conductive plane and a lower central conductive plane;
(b) placing, over said upper central and under said lower central conductive planes, an upper and a lower internal plane of microstrip transmission lines having a width/thickness ratio of 5 mils/0.7 mils, and separated by a first upper and lower internal dielectric substrate of 25 mils thickness from said respective upper and lower central conductive planes, and wherein said upper and lower microstrip transmission lines run in a direction at right angles to each other;
(c) placing an upper and lower outer dielectric substrate, each of 3 mils thickness, over said upper and under said lower internal planes of said microstrip transmission lines;
(d) depositing, over and under said respective upper and lower outer dielectric substrates, an upper and lower external plane of longitudinal microstrip transmission lines in which said upper external plane of microstrip lines run in a direction at right angles to said lower external plane of transmission lines, and where each external microstrip transmission line has a width/thickness ratio of 8 mils/1.4 mils;
(e) depositing conductive land areas on said upper external plane using a 16 mil grid separation pattern between centers of said conductive land areas;
(f) forming transverse interconnecting conductive paths between selected ones of said land areas, of said microstrip transmission lines, and of said upper central and lower central conductive planes.

4,553,112

OVERMODED TAPERED WAVEGUIDE TRANSITION HAVING PHASE SHIFTED HIGHER ORDER MODE CANCELLATION

Saad S. Saad, Chicago, and Charles M. Knop, Lockport, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed May 31, 1983, Ser. No. 499,318
Int. Cl.⁴ H01P 1/162
U.S. Cl. 333—21 R **18 Claims**



1. A phased-overmoded, tapered waveguide transition for coupling two waveguides for the propagation of desired microwave signals therethrough, said waveguides being displaced along a longitudinal direction and having different transverse dimensional cross-sections, the inside walls of said transition tapering from one of said waveguide cross-sections to the other, said transition comprising

a central section which is tapered with a constant slope along its longitudinal section and two end sections which are tapered with a variable slope resulting in a curvature along the longitudinal section, each of said end sections having the same slope as said central section where the respective end sections join with said central section,

one of said end sections and at least a portion of the other of said end sections being over-moded and, therefore, giving rise to higher order modes of the desired microwave signals propagated therethrough,

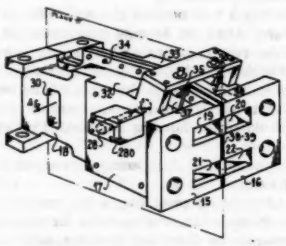
said linearly tapered central section shifting the phase of higher order modes generated along one end section of the transition so that at least the major portion of such higher order modes is cancelled by higher order modes generated along the other end section of the transition.

4,553,113

COMPACT DIFFERENTIAL COUPLER FOR MONOPULSE RADAR

Pierre Blanchard, Paris, France, assignor to Thomson CSF, Paris, France

Filed Apr. 5, 1982, Ser. No. 365,386
Claims priority, application France, Apr. 10, 1981, 8107205
Int. Cl.⁴ H01P 5/20
U.S. Cl. 333—122 **8 Claims**



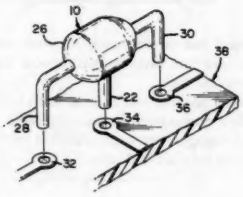
1. A compact differential coupler for a monopulse radar constituted by four magic T's, comprising two metal members which are symmetrical with respect to a plane π and which are assembled facing one another along said plane of symmetry π and are machined in such a way that their assembly constitutes the four magic T's, two of which are of the bent branch type, the third is of the coaxial load type and the fourth of the fork type said coaxial load type magic T being connected between said two bent branch type magic T's, and said bent branch type magic T's being connected to said fork type magic T.

4,553,114

ENCAPSULATED PRINTED CIRCUIT BOARD FILTER

James M. English, Coplay; Nicholas L. Gurreri, York, and John P. Kling, Mt. Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 29, 1983, Ser. No. 527,041
Int. Cl.⁴ H03H 7/01; H05K 1/16
U.S. Cl. 333—182 **8 Claims**



1. A filter assembly for providing RF/EMI filtering on a circuit board comprising:

a cylindrical filter element having a bore therethrough;

a conductive pin extending through the bore of said filter element and secured in electrical and mechanical engagement with the inner surface thereof, said conductive pin having end portions which extend outwardly from said bore said conductive pin end portions arranged so as to electrically engage respective conductive paths on said circuit board; and

a ground pin having a first leg portion disposed about and substantially encircling the exterior surface of said filter element and in electrical and mechanical engagement therewith, and a second leg portion which extends outwardly from said first end and in electrical engagement with another respective conductive path on said circuit board.

4,553,115

MOLDED CASE CIRCUIT BREAKER WITH SINGLE SOLENOID OPERATOR FOR RECTILINEAR HANDLE MOVEMENT

Kurt A. Grunert, Beaver, and Walter K. Huffman, Towamencin Township, Montgomery County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,054
Int. Cl.⁴ H01H 75/00
U.S. Cl. 335—14 **11 Claims**

1. An electrical circuit breaker comprising

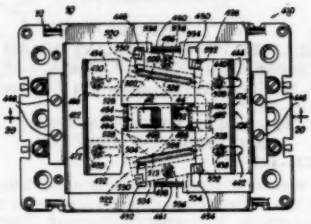
a pair of separable electrical contacts,

operating means for moving said contacts into a CLOSED position and into an OPEN position, said operating means including a manually engageable handle, and

solenoid actuated means for moving said handle between an OFF position corresponding to said OPEN position of said contacts and an ON position corresponding to said CLOSED position of said contacts, said solenoid actuated means comprising a single coil solenoid, a first bistable mechanical latch having first and second stable states for alternately placing said handle in said ON position or in said OFF position upon successive actuations of said

solenoid, and a second bistable mechanical latch having said first and second stable states,

said first bistable mechanical latch being movable into said first state or said second state in response to the movement of said handle and including a first stop engageable with a first component of said solenoid actuated means when said first bistable mechanical latch is in said first state and being



disposed out of engagement with said first component when said first bistable mechanical latch is positioned in said second state,

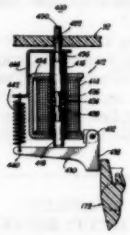
said second bistable mechanical latch being engageable with said first component in said first state and being disposed out of engagement with said first component when positioned in said second state.

4,553,116

MOLDED CASE CIRCUIT BREAKER WITH RESETTABLE COMBINED UNDERVOLTAGE AND MANUAL TRIP MECHANISM

Dante Bagalini, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,058
Int. Cl.⁴ H01H *73/00*
U.S. Cl. 335—20 **13 Claims**



1. An undervoltage trip mechanism comprising

an electrical coil having an elongated centrally disposed aperture,

an elongated compression spring,

a first elongated ferromagnetic plunger,

a second elongated ferromagnetic plunger, and

manually engagable reset means, said first and second plungers being serially disposed in said aperture and being movable relative to each other into and out of physical engagement along the longitudinal axis of said aperture,

said compression spring being disposed between and in engagement with said plungers for biasing said first plunger out of physical engagement with said second plunger,

said coil when energized by a voltage greater than a predetermined voltage being capable of supplying an electromagnetic force across abutting portions of said plungers of a magnitude greater than the magnitude of the spring force applied by said compression spring to maintain said first plunger in physical engagement with said second plunger,

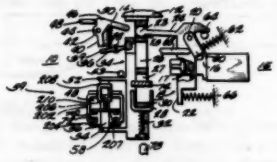
said reset means achieving the reengagement of said first plunger with said second plunger subsequently to the disengagement thereof and comprising an elongated manually engagable and depressible reset button in engagement with one longitudinal end of said first plunger.

4,553,117

PNEUMATIC TIMING ATTACHMENT FOR AN ELECTROMAGNETIC DEVICE

Allin W. Schubring, Milwaukee, Wis., assignor to Square D Company, Palatine, Ill.

Filed Sep. 2, 1983, Ser. No. 528,907
Int. Cl.⁴ H01H *7/03*
U.S. Cl. 335—61 **18 Claims**



1. A timer attachment for an electromagnetically operated device wherein the device includes:

a housing having a front end, a member movable along an axis perpendicular to the front end and an electromagnet coupled to the member for moving the member along the axis from a deenergized position to an energized position in response to the deenergization and energization of the electromagnet, said timer attachment comprising:

an adapter assembly including an adapter part secured at the front end of the housing and an actuator secured to a front end of the member and movable along the axis by the member, said actuator having an end spaced forwardly of a front side of the adapter part,

a base assembly having a base part mounted on a front side of the adapter part, said base assembly including:

a bellcrank having a pivot mounted on a front side of the base part, said bellcrank having a first arm extending from the pivot to an end that is engagable with the end of the actuator for rotating the bellcrank in a first direction when the electromagnet is energized and a second arm extending from the pivot at an angle to the first arm, a spring reacting on the bellcrank and urging the bellcrank toward rotation in a second direction that is opposite the first direction, a spring biased lever having a portion engagable with the bellcrank for supplying an additional force for rotating the bellcrank in the second direction, and

a timer assembly including a housing part that is mountable in either of two selected positions on the base part, said timer assembly including:

a slider having a first portion coupled with an end on the second arm when the housing is mounted on the base in one of the two positions and a second portion that is coupled with the end of the second arm when the housing is mounted on the base in the other of the two positions and movable along an axis in response to rotation of the bellcrank when the housing is mounted on either of the two positions,

an operator mounted in the housing for reciprical movement along the axis,

a guide and a spring providing a lost motion connection between the slider and the operator for translating movement between the slider and operator, and

a timing mechanism having a member movable from a first position to a second position during a timed interval,

a latch mechanism including a pair of latch levers each

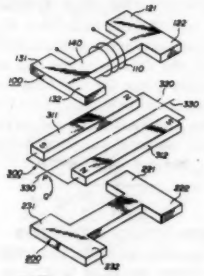
having a central portion rotatable about a pivot with a first of the latch levers having an arm extending from its associated pivot to an end that is coupled to the operator and the second of the latch levers having an arm extending from its associated pivot to an end that is spaced from the timing member when the timing member is at the first position and is engaged by the timing member when the timing member is at the second position, said latch levers each having a second arm extending from its associated pivot to ends that are positioned to mutually engage each other when the timing member is at its first position, and a spring positioned between the arms of the levers urging the levers in the same rotary direction.

4,553,118

POLARIZED ELECTROMAGNETIC DEVICE

Shunichi Agatahama, Osaka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 1, 1982, Ser. No. 384,051
Claims priority, application Japan, Jun. 15, 1981, 56-92860; Jun. 15, 1981, 56-92861; Jun. 29, 1981, 56-101732
Int. Cl.⁴ H01H *51/22*
U.S. Cl. 335—79 **4 Claims**



1. A polarized electromagnetic device comprising:

a core made of a soft-magnetic material and wound with a magnetizing winding for generating magnetic flux in a first direction in response to excitation by a first voltage polarity and for generating magnetic flux in a second direction opposite to said first direction in response to excitation by a second voltage polarity opposite said first voltage polarity, said core including a pair of separated pole pieces;

a yoke, made of the same material as said core, being separated from said core to define an air gap, said yoke having facing-surfaces opposingly disposed to said pair of pole pieces of said core through said air gap so as to be magnetically connected with said core through said air gap to form a first closed magnetic path of magnetic flux generated by said magnetizing winding; and

an armature including a body having a permanent magnet, both magnetic poles of said permanent magnet being disposed in said air gap so as to form second and third closed magnetic paths with said core through said air gap and with said yoke through said air gap, respectively, said armature mounted so as to pivotally move said both magnetic poles between said pole pieces of said core and said facing-surfaces of said yoke; wherein

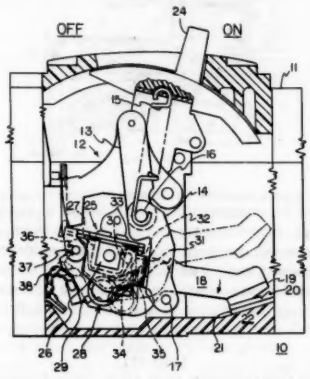
when said magnetizing winding is excited to generate magnetic flux in said first direction, the magnetic flux in said first closed magnetic path opposes magnetic flux in said third closed path so as to allow said magnetic poles of said permanent magnet to be attracted to said core, and when said magnetizing winding is excited to generate magnetic flux in said second direction, the magnetic flux in said first closed magnetic path opposes magnetic flux in said second closed path so as to allow said magnetic poles of said permanent magnet to be attracted to said yoke.

4,553,119

ELECTRIC CIRCUIT BREAKER HAVING REDUCED ARC ENERGY

Roger N. Castonguay, Terryville, and Charles L. Jencks, Avon, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 10, 1984, Ser. No. 609,053
Int. Cl.⁴ H01H *77/10*
U.S. Cl. 335—147 **5 Claims**



1. A molded case circuit breaker comprising:

a trip unit for sensing current flow through a pair of fixed and movable contacts and for activating a linked toggle operating mechanism to interrupt current flow through the contacts for generating an arc voltage across said contacts;

a contact carrier for supporting a movable contact arm having said movable contact at one end and a pivot at an opposite end;

a contact spring mounted on said contact carrier and arranged on said movable contact arm to provide a first force on said movable contact arm at a first predetermined distance from said pivot when a first amount of current flows through said contacts and becomes displaced to a second predetermined distance from said pivot to provide a second force on said movable contact arm when a second amount of current flows between said contacts, said second current being larger than said first current and said second force being larger than said first force to thereby control the magnitude of said arc voltage.

4,553,120

SELF-CENTERING DEFLECTION YOKE ASSEMBLY

Robert Dam, Lombard, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 26, 1984, Ser. No. 686,316
Int. Cl.⁴ H01F *7/00*
U.S. Cl. 335—210 **10 Claims**

1. A self-centering magnetic deflection yoke assembly for use with a cathode ray tube comprising:

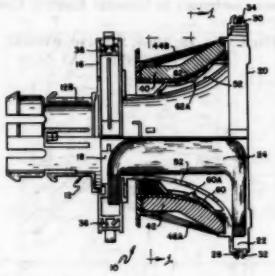
an annular housing symmetrical about a longitudinal axis and including inner recessed portions and an outer tapered portion;

a horizontal deflection coil symmetrically aligned about the longitudinal axis of the annular housing and positioned within the inner recessed portions thereof;

an annular magnetic core positioned about the outer tapered portion of the annular housing;

a vertical deflection coil symmetrically wound around portions of said magnetic core; and

a plurality of spaced, resilient members positioned on the outer tapered portion of said annular housing and in contact with portions of an inner surface of said magnetic core around which said vertical deflection coil is not



wound for compensating for variations in the dimensions of said magnetic core in maintaining radial alignment between said magnetic core and the longitudinal axis of said housing and for permitting rotational displacement of the combination of said magnetic core and said vertical deflection coil relative to said horizontal deflection coil.

4,553,121

CORE STRUCTURE FOR ELECTROMAGNETIC DEVICES

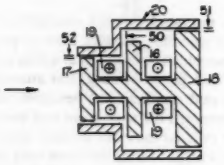
Frank M. Logie, London, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Apr. 25, 1984, Ser. No. 603,779

Claims priority, application United Kingdom, May 13, 1983, 8313170

Int. Cl.⁴ H01F *7/08*

U.S. Cl. 335—261 **1 Claim**



1. An electromagnetic device comprising a core or stator structure, an armature movable relative to the core structure, at least one pole piece defined by said core structure, an energising winding wound about a part of the core structure and which when supplied with electric current drives magnetic flux through said pole piece, said pole piece defining a pole face between which and the armature magnetic flux can traverse an air gap extending in the direction of relative movement of the armature, and core structure and a return air gap defined between the armature and core structure, characterised in that said return air gap extends in a direction substantially at right angles to the direction of relative movement of the core structure and armature, the core structure carrying a further winding for driving flux in the same direction through said pole piece as said first mentioned winding, the device including a further return air gap for the flux produced by said further winding, said further return air gap also extending in a direction substantially at right angles to the direction of relative movement of the core structure and armature.

4,553,122

CORED MAGNET WITH LIGHTWEIGHT LARGE AREA POLE PIECES

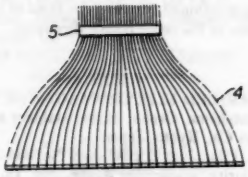
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Middlesex, England

Filed Feb. 9, 1984, Ser. No. 578,510

Claims priority, application United Kingdom, Feb. 25, 1983, 8305303

Int. Cl.⁴ H01F *7/20*

U.S. Cl. 335—296 **14 Claims**



1. A magnet comprising a magnetic core extending between opposed pole pieces, at least one of which pole pieces comprises a plurality of wires of magnetic material, corresponding ends of which are spaced from each other by spacing means such that their end surfaces form a planar array which faces the opposite pole piece, the density of the end surfaces per unit area being sufficiently great for the field within the space between the pole pieces to be substantially free of variations corresponding to the positions of said end surfaces, the parts of the wires which are adjacent the core being held in close contact with each other and with the core.

4,553,123

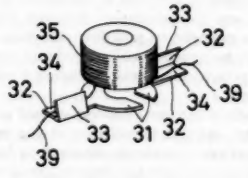
MINIATURE INDUCTOR

Minoru Tamada; Takashi Kumokawa, and Ichiji Shimamoto, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 3, 1982, Ser. No. 414,666

Int. Cl.⁴ H01F *15/10*

U.S. Cl. 336—83 **11 Claims**



1. An inductor, comprising:

a closed magnetic circuit core comprising an outer core for substantially enclosing a coil space, said outer core having defined therein a plurality of windows; said closed magnetic circuit core further comprising an inner coil core located in said coil space;

at least one coil in said coil space wound around said inner coil core; said coil comprising at least one wire having a plurality of lead wires, each lead wire extending out of said coil space through a respective one of said windows; and

a plurality of plates, each plate being mounted to said closed magnetic circuit core and comprising a respective terminal extending outward from a respective one of said windows in said outer core, each said respective terminal having first and second portions and being bendable for

holding said respective lead wire between said first and second portions;

each said respective terminal comprising a solder layer on at least one of said first and second portions for being melted when said respective lead wire is held between said first and second portions and for connecting said first and second portions to each other and to said respective lead wire;

said wire of said coil having a heat-meltable coating material for insulating said wire and for melting from said lead wires of said wire when said solder layer of each said terminal is melted.

4,553,124

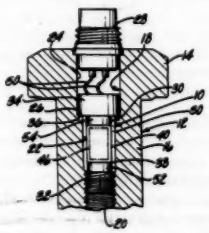
STRAIN GAUGE TRANSDUCER ASSEMBLY

Raymond W. Malicki, Dearborn Heights, Mich., assignor to Carron & Company, Inkster, Mich.

Continuation of Ser. No. 532,666, Sep. 16, 1983, abandoned. This application May 10, 1985, Ser. No. 733,396

Int. Cl.⁴ G01L *1/22*

U.S. Cl. 338—5 **11 Claims**



1. A strain gauge transducer assembly comprising: a bolt having a central axis and including a head having a counterbored hole extending therethrough along the central axis of the bolt; said counterbored hole including a threaded inner portion, an intermediate portion extending outwardly from the threaded inner portion, an outer portion of a larger size than the intermediate portion, and an outwardly facing surface that extends between the intermediate and outer portions in a perpendicular relationship to the central axis; a transducer received within the counterbored hole of the bolt; said transducer including a body having a central axis coaxial with the central axis of the bolt and including a threaded inner end threaded into the inner portion of the counterbored hole; said transducer body also including an outer end having an enlarged head; said enlarged head having an annular seat that faces toward the inner end thereof extending perpendicular to the central axis thereof in engagement with the outwardly facing surface of the counterbored hole in the bolt; the transducer body also including an intermediate portion having a web that connects the inner and outer ends thereof and has oppositely facing parallel surfaces; said web having a thickness in the range of about 0.020 to 0.060 of an inch and also having a width that is a plurality of times the thickness thereof and less than the diameter of the threaded inner end; at least two strain gauges each of which is mounted on one of the surfaces of the web to sense deformation of the web; a wire passage through one end of the transducer body; and wires connected to the strain gauges and extending through the wire passage to permit sensing of the web deformation and stress of the bolt.

4,553,125

HIGH VOLTAGE RESISTANCE ELEMENT

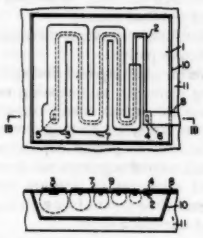
Yoshitaka Sugawara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 434,057

Claims priority, application Japan, Oct. 14, 1981, 56-162651

Int. Cl.⁴ H01C *3/10*

U.S. Cl. 338—283 **4 Claims**



1. A resistance element capable of withstanding a high voltage, comprising:

(a) a resistive region of a first conductivity type formed in a major exposed surface of a single crystal island of a semiconductor integrated circuit, said island having a second conductivity type opposite to that of said resistive region; and

(b) said resistive region being reciprocatively folded by at least one and a half turns in a planar pattern;

(c) wherein pitch at which said resistive region is folded is progressively decreased as viewed in the direction in which an extent of a depletion layer formed within said single crystal island upon application of a voltage between both ends of said resistive region is decreased.

4,553,126

RESISTANCE HEATING ELEMENT

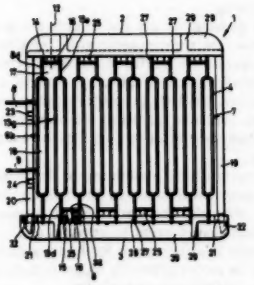
Manfred Brandstätter, and Alfred Könnemann, both of Wuppertal, Fed. Rep. of Germany, assignors to Grote & Hartmann GmbH & Co., KG, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,413

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328078

Int. Cl.⁴ H01C *10/14*

U.S. Cl. 338—319 **29 Claims**



1. A resistance heating element comprising:

an integral one-piece sheet metal stamped part strip disposed between bearing elements fabricated from electrically insulating material;

said one-piece strip having a longitudinal meander pattern;

said one-piece strip being bent to provide at least first and

second segments connected by arch means to position said first segment in front of said second segment;

each of said first and second segments having a transverse meander pattern;

said first segment having first and second electrical terminal means to complete a conductive path from said first terminal means through said first segment and said arch means to said second segment, and then back from said second segment through said arch means and said first segment to said second terminal means;

said longitudinal and transverse meander patterns providing said conductive path;

bearing means for securing said first and second segments to the bearing elements, said bearing means being bearing pins constructed as part of said one-piece strip; and

slide means for freely projecting through openings in the bearing elements to permit expansion and shrinkage of said first and second segments while maintaining said first and second segments in position between the bearing elements, said slide means being slide pins constructed as part of said one-piece strip;

whereby the one-piece construction of said strip avoids damage thereof during use when subjected to forced movements, jarrings and vibrations.

4,553,127

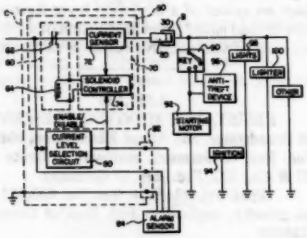
BATTERY LOCK ANTI-THEFT SYSTEM

Darrell E. Issa, 7544 Richmond Rd., Oakwood Village, Ohio 44146

Filed Jun. 30, 1983, Ser. No. 509,333

Int. Cl.[4] B60R *25/04*

U.S. Cl. 340—64 **18 Claims**



3. An access control for a vehicle having an electrical system including a battery and a starter motor, the access control system comprising:

(a) current passing means for selectively passing current limited to a first, preselected current level which is insufficient to operate the starter motor and current of a second current level which is sufficient current to operate the starter motor, the first current level being sufficiently high to operate vehicle electrical devices which draw less current than the starter motor, the current passing means including:

(1) a normally closed switch means for passing current of the second level between the battery and the starter motor, whereby the starter motor is normally able to draw sufficient current to operate, and

(2) a current limiting means for limiting current passed to the starter motor generally to the first current level, the current limiting means including:

(i) a current sensor for sensing current passed to the starter motor, and

(ii) means for opening the normally closed switch means in response to the sensed current exceeding the first current level, whereby the passage of current to the starter motor through the normally closed switch means is stopped in response to the passed current exceeding the first current level, and then allowing the normally closed switch means to close after the current level has dropped below the first current level,

the current passing means being connected electrically between the battery and the starter motor;

(b) current level selection means for selective enabling the current passing means to pass one of the first and second current levels, the current level selection means selectively enables and disables the current limiting means from opening the normally closed switch, whereby when the current passing means is enabled, the vehicle operates normally and, when the current passing means is disabled, the vehicle operates as if it has a low battery.

4,553,128

ANALOG-TO-DIGITAL CONVERTER

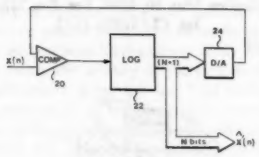
Daniel Pilost, LaGaude, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 25, 1983, Ser. No. 555,313

Claims priority, application European Pat. Off., Dec. 28, 1982, 82430046.1

Int. Cl.[4] H03K *13/02*

U.S. Cl. 340—347 AD **3 Claims**



1. An analog-to-digital converter for converting each sample of an analog signal into an N bit long rounded-off digital value expressed in two's complement code by means of a dichotomous process, said converter including:

a two-input comparator the first input of which is fed with the sample of the signal to be digitally converted;

a logic device connected to said comparator and providing an (N+1) bits long word;

a digital-to-analog converter connected to said logic device and converting said (N+1) bit long word into an analog value which analog value is applied to the second input of said converter;

said logic device including, initiating means for initially forcing each of the (N+1) bits produced by the logic device to the binary "1" value and second means for initiating an N step sequential operation of the logic device, in which the output of the logic device in sequence starting with the highest order bit first is conditionally determined based on the value provided by the comparator while The immediately adjacent lower order bit provided by the logic device is unconditionally forced to a binary "0" value and each of said conditionally determined bits remains unchanged for the remainder of the N step sequence; and,

means for taking the N most significant bits obtained at the output of said logic device, at the end of the N steps long conversion process.

4,553,129

DATA TRANSMISSION BY SUBRATE GROUPING

John B. McNesby, Mesa, Ariz., and Erik K. Walker, Denver, Colo., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Aug. 5, 1983, Ser. No. 520,669

Int. Cl.[4] H03K *13/24*

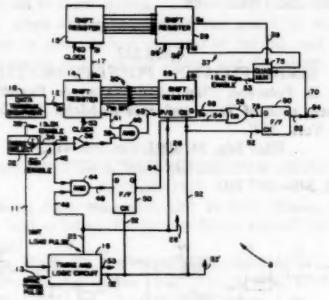
U.S. Cl. 340—347 DD **18 Claims**

1. In a data transmission system, apparatus for converting a

serial subrate binary data stream into a binary signal at the line transmission rate, comprising:

first means for periodically accepting a data byte from said subrate data stream with data in other than a first bit position;

second means for expanding said data byte by one additional bit by adding a control bit in the first bit position of said accepting means;



third means for recirculating said expanded data byte through said accepting means a predetermined number of times;

fourth means for causing said one additional bit in the first bit position to be one of a binary 1 and 0 in the first expanded byte outputted from said first means and applied to said third means and to be the other of a binary 1 and 0 for recirculated bytes for the same expanded byte; and

fifth means for serially reading out said bits of said expanded data byte at the line transmission rate.

4,553,130

VARIABLE-LENGTH ENCODING-DECODING SYSTEM

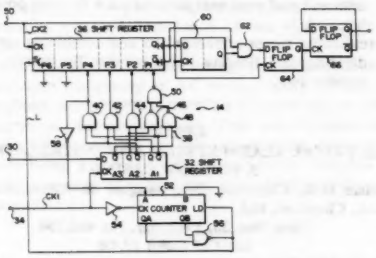
Masaaki Kato, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 6, 1984, Ser. No. 586,743

Claims priority, application Japan, Mar. 11, 1983, 58-40372

Int. Cl.[4] G11B *5/09*

U.S. Cl. 340—347 DD **10 Claims**



6. A variable-length encoding system comprising:

(a) data word generator means for receiving a binary digital data stream and for framing the binary digital data stream by using as a unit word a data word of variable length in accordance with a state of the data string, thereby generating a data word string, said data word of variable length being any one of three 2-bit data and two 3-bit data in accordance with the state of said digital data string, said 2-bit data being first three data words constituted by a first combination of three 2-bit data selected from a second combination of four 2-bit data (0,0), (0,1), (1,0) and (1,1), said 3-bit data being second data words produced such that a remaining one of said second combination is used as upper bits of each of said 3-bit data and is combined with each of two 1-bit data as a lower bit of said 3-bit data;

(b) first logic circuit means, connected to said data word generator means, for sequentially receiving the data words and performing a predetermined logic operation for converting each one of the data words such that a given data word of said data words which is subjected to encoding is encoded to a corresponding one of 4-bit code words when the given data word corresponds to one of the 2-bit data, and the given data word is encoded to a corresponding one of 6-bit code words when the given data word corresponds to one of the 3-bit data, and producing a code word string;

(c) second logic circuit means, connected to said first logic circuit means, for detecting a specific data array (1,0,1) included in the code words generated from said first logic circuit means and converting the specific data array to another data array; and

(d) flip-flop circuit means, connected to said second logic circuit means, for producing a recording signal which has a waveform subjected to alternate transition between first and second signal levels in correspondence to positions of logic "1" data in a code word bit of stream and which is directly recorded on a predetermined magnetic recording medium.

4,553,131

METHOD AND APPARATUS FOR ENCODING A BINARY DATA STREAM INTO A BINARY CODE STREAM

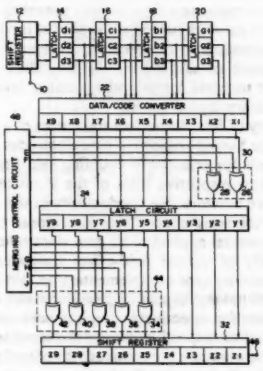
Naoki Endoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,869

Claims priority, application Japan, Mar. 31, 1983, 58-53539

Int. Cl.[4] H03K *13/24*

U.S. Cl. 340—347 DD **10 Claims**



1. A method for encoding a binary data stream into a binary code stream comprising the following steps of:

dividing a binary data stream into data codes each of 3 bits;

determining which groups, each data word belongs to first, second or third group;

encoding unconditionally a data word into a binary code word of 9 bits when the data word belongs to the first group, encoding a data word into a binary code word of 9 bits in consideration of preceding or succeeding two data words when the data word belongs to the second group, encoding a data word into a binary code word of 9 bits in consideration of a preceding data word and a succeeding data word when the data word belongs to the third group;

inverting the bit codes at predetermined bit locations in each code word and one preceding code word according to a pattern of code bits "0" and "1" in both said code word to merge said code words so that in the code word stream the code bits 37 0" from 5 to 19 are consecutively arrayed between two adjacent code bits "1"; and

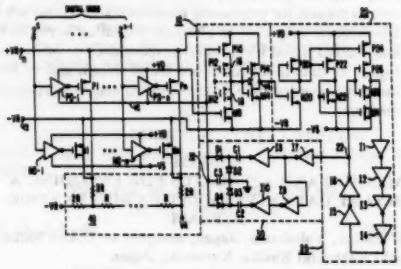
converting each of said code words into a binary code stream.

4,553,132

APPARATUS FOR MATCHING FET SWITCHES AS FOR A VIDEO DIGITAL-TO-ANALOG CONVERTER

Andrew G. F. Dingwall, Bridgewater, and Victor Zazzu, Montvale, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 24, 1983, Ser. No. 460,656
Int. Cl.⁴ H03K *13/03*
U.S. Cl. 340—347 DA **18 Claims**



1. Apparatus for converting binary digital values, each consisting of a plurality of binary bit values, to analog levels, comprising:

a source of first and second reference potentials;

means for applying a first control potential;

a resistive network having a plurality of input terminals each corresponding to a respectively different one of the binary bit values of said binary digital values and having an output terminal for providing analog levels representing said binary digital values;

a plurality of first field-effect transistors of a first conductivity type having respective gate electrodes and conductive channels for selectively coupling said first reference potential to respective ones of the input terminals of said resistive network, the conductivity of the channel of each transistor being controllable in response to said first control potential applied to its gate electrode;

a plurality of second field-effect transistors of a second conductivity type complementary to said first conductivity type having respective gate electrodes and conductive channels for selectively coupling said second reference potential to respective ones of the input terminals of said resistive network, the conductivity of said channel of each transistor being controllable in response to a second control potential applied to its gate electrode;

means for developing said second control potential including:

bridge circuitry coupled to said first and second reference potential applying means and responsive to said first and second control potentials for developing a signal indicative of the relative conductivities of the respective channels of said first and second field-effect transistors; and

variable voltage generating means responsive to the signal provided by said bridge means for developing a variable potential for application as said second control potential to adjust the conductivity the channels of said second field-effect transistors to achieve a desired relationship between the conductivities of the corresponding channels of said first and second field-effect transistors; and

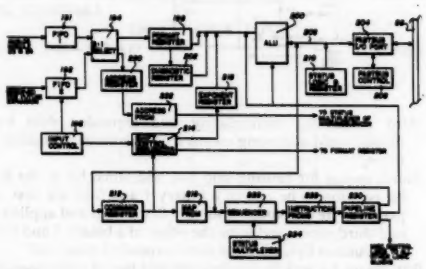
means coupled to said means for applying said first control potential and to said means for developing said second control potential and responsive to the binary bit values of said binary digital values for selectively applying said respective first and second control potentials to the gate electrodes of corresponding ones of said first and second field-effect transistors.

4,553,133

SERIAL FLOATING POINT FORMATTER

Robert D. Peterson, Plano, and Wayne A. Penner, Farmers Branch, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1982, Ser. No. 417,922
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 340—347 DD **13 Claims**



1. In a system where seismic data is detected, then preamplified, a floating point formatter comprising:

first means for receiving fixed point serial data from the preamplifier;

scaling means connected to said first means for removing bias added by said preamplifier;

second means for shifting said serial digital data a predetermined number of bits;

third means for determining an exponent representing the number of bits said serial digital data has been shifted by said second means;

combining means for combining said shifted serial digital data and said exponent to produce a floating point number; and

prestacking means connected to said combining means for dividing said floating point number by powers of the number two.

4,553,134

ELECTRICAL ALARM SYSTEM FOR INSTALLATION IN A WINDOW CASING

William Holt, Claymont, Del., assignor to Alarm Accessory Ltd., Claymont, Del.

Filed Dec. 23, 1982, Ser. No. 452,734
Int. Cl.⁴ G08B *13/08*
U.S. Cl. 340—545 **8 Claims**

1. An electrical alarm system for installation in a window having a casing comprising a rod inserted into a tube in telescope fashion, said rod having a compression spring affixed

thereto, said spring extending into said tube and affording spring loading means for removably affixing said rod and tube within said casing of said window such that both ends of said rod and tube are removably held against said casing by the force of said compression spring but are not otherwise fastened thereto, said rod having sensor means located adjacent to or within said rod and being electrically unconnected to either of said rod or tube, said sensor means being connected in closed or open circuit to alarm means,

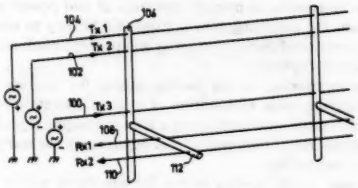
whereby when said spring loaded rod and tube assembly installed in said window is jarred or moved, said sensor means opens or closes the circuit and the alarm means sounds.

4,553,135

ELECTROMAGNETIC FIELD PERIMETER DETECTION APPARATUS

Ami Grynberg, Neve Monosson, and Ya'Acov Ronen, Rishon Le-Zion, both of Israel, assignors to Israel Aircraft Industries Ltd., Israel

Filed Apr. 5, 1982, Ser. No. 365,324
Claims priority, application Israel, Apr. 5, 1981, 62589
Int. Cl.⁴ G08B *13/24*
U.S. Cl. 340—564 **29 Claims**



1. Detection apparatus comprising:

at least one receiving conductor for sensing an electromagnetic field;

at least three mutually spaced elongate transmitting conductors each coupled to a source of electromagnetic energy and cooperating to produce a desired electromagnetic field along the length of said receiving conductor;

alarm indicating circuitry coupled to said at least one receiving conductor for providing an alarm indication in response to a sensed disturbance of said electromagnetic field,

said source of electromagnetic energy for each transmitting conductor comprising an AC voltage source of selected amplitude and phase, the selection of amplitude and phase determining the configuration of the overall electromagnetic field produced by said transmitting conductors, there being a non-zero phase relationship between the voltage sources of at least two of said transmitting conductors.

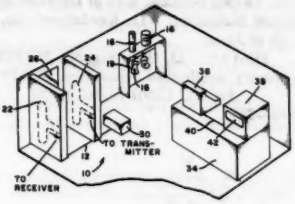
4,553,136

AMORPHOUS ANTIPILFERAGE MARKER

Philip M. Anderson, III, Chatham; Ryusuke Hasegawa, Morristown, and Robert M. VonHoene, Basking Ridge, all of N.J., assignors to Allied Corporation, Morris Township, N.J.

Filed Feb. 4, 1983, Ser. No. 463,743
Int. Cl.⁴ G08B *13/26*
U.S. Cl. 340—572 **11 Claims**

1. For use in a magnetic theft detection system, a marker adapted to generate magnetic fields at frequencies that are harmonically related to an incident magnetic field applied within an interrogation zone and have selected tones that provide said marker with signal identity, said marker comprising an elongated, ductile strip of amorphous ferromagnetic



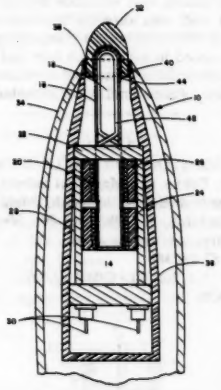
material having a value of magnetostriction near zero and retaining its signal identity under stress.

4,553,137

NON-INTRUSIVE ICE DETECTOR

John E. Marxer, Apple Valley, and John W. Kowles, Minneapolis, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 1, 1983, Ser. No. 499,819
Int. Cl.⁴ G08B *19/02*
U.S. Cl. 340—582 **19 Claims**



17. In an ice detector comprising a vibrating element, said vibrating element having a front portion, vibrating means suitably disposed with respect to the vibrating element for exciting the vibrating element into vibration, and means for sensing a shift of the frequency of vibration of said vibrating element resulting from a change of mass of said vibrating element due to accumulating thereon, the improvement comprising a case enclosing and supporting the ice detector, an aperture in said case, cap means rigidly affixed to the front portion of the vibrating element, said cap means being exposed to the air stream through said aperture and formed to be substantially conformal to such surface, the cap means being made of substantially non-compliant material and disposed to be substantially non-intrusive to the air stream with respect to such surface, and isolation means disposed between the aperture and the cap means for substantially water sealing the case interior and substantially vibrationally isolating the cap means from the case.

4,553,138

FIRE ALARM SYSTEM

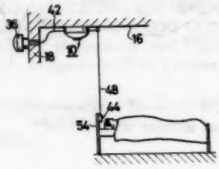
Yoshitaka Nakanishi, 12-9, Yawata 5-chome; Hiroshi Nakanishi, 16-18, Yawata 6-chome, both of Ichikawa-shi, Chiba-ken, and Takashi Nakanishi, 1-11, Kandaizumi-cho, Chiyoda-ku, Tokyo, all of Japan

Filed Mar. 23, 1982, Ser. No. 360,907

Claims priority, application Japan, Sep. 28, 1981, 56-152227

Int. Cl.[4] G08B *17/00, 25/00*

U.S. Cl. 340—584 **5 Claims**



1. A fire alarm system comprising a first unit mounted on a wall or ceiling surface of a room of a building and a second unit located more conveniently to an occupant of the room,

said first unit comprising fire sensing means, acoustic alarm means controlled by said fire sensing means, and power supply means for supplying power to said fire sensing means and said alarm means, and

said second unit comprising a switch box, an on-off control switch in said switch box and electrically connected with said alarm means of said first unit additionally to control said alarm means, and vibration means provided in said switchbox and also directly actuated by said control switch, said vibration means comprising a vibration type buzzer mounted in said switch box and operable to produce an audible alarm signal and to vibrate said switch box to provide a tactile signal when actuated.

4,553,139

VACUUM MONITOR FOR VACUUM INTERRUPTER

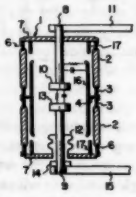
Shuzo Tanigaki, Tokyo, and Masayuki Sakaki, Numazu, both of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed Jun. 22, 1983, Ser. No. 506,662

Claims priority, application Japan, Jul. 5, 1982, 57-116505; Aug. 17, 1982, 57-142388

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—626 **17 Claims**



1. A vacuum monitor for a vacuum interrupter provided with high-voltage conductors connected to the interrupter, said vacuum monitor comprising:

(a) detector terminal means disposed near the high voltage conductors and non-galvanically coupled to the high voltage conductors for receiving impulsive electromagnetic wave signals superimposed upon an alternating voltage, said impulsive signals being generated by electric discharge caused when vacuum pressure increases within the vacuum interrupter; and

(b) detecting means connected to said detector terminal means for electrically processing the impulsive electromagnetic wave signals received through said detector terminal means and for outputting an alarm signal, indicative of abnormal vacuum pressure within the vacuum interrupter, when the voltage level of the processed impulsive electromagnetic wave signal exceeds a predetermined reference value.

4,553,140

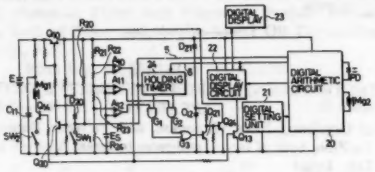
POWER SUPPLY CONTROL CIRCUIT

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,427

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—636 **7 Claims**



1. A power supply control circuit for controlling supply of power from a battery to a battery-operated circuit, the control circuit comprising:

manually operable power switch means;

means responsive to manual operation of said power switch means for supplying power from said battery to said battery-operated circuit as long as said power switch means is manually operated;

a time-measuring circuit having means for starting time-measuring upon termination of manual operation of said switch means and producing a time-measuring signal for a predetermined time period that begins with the starting of time-measuring;

a holding circuit having means for supplying power from said battery to said battery-operated circuit while said time-measuring signal is being produced; and

a detection circuit for detecting the battery voltage and reducing said predetermined time period as the battery voltage goes down.

4,553,141

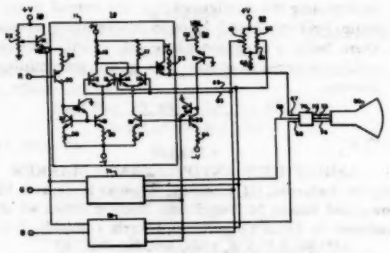
PICTURE CONTROL FOR RGB MONITOR

Michael D. Flasza, Schaumburg, and David K. Nienaber, Des Plaines, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 21, 1982, Ser. No. 420,759

Int. Cl.[4] G09G *1/28*

U.S. Cl. 340—703 **10 Claims**



1. A color monitor for developing a color display in response to input R G and B color signals, each of which color signals includes both chrominance information and luminance information, said display being produced by a color picture

tube and exhibiting color balance and color black level determined by the amplitude of said input color signals and the characteristics of said color picture tube, comprising:

a plurality of inputs for receiving said input color signals and a corresponding plurality of outputs for supplying said color signals to said picture tube;

a plurality of matched gain blocks coupled between said inputs and said outputs for amplifying said color signals, each said gain block including balanced multiplier means for enabling simultaneous control of the levels of said color signals in said gain blocks without upsetting said color balance and said black level of said display; and

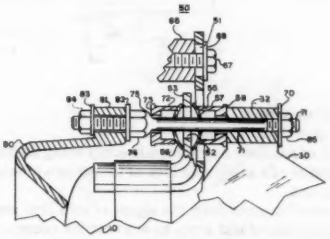
picture control means applying a common gain control voltage to said gain blocks.

4,553,142

APPARATUS FOR MOUNTING A TOUCH CONTROL PANEL ASSEMBLY TO A CRT

Paul Strauss, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 20, 1982, Ser. No. 420,147
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—712 **10 Claims**



1. A support system for a CRT touch panel assembly having accurately aligned energy sources and receptors producing a grid of crossing energy paths adjacent to the faceplate of a CRT that includes mounting elements permanently affixed thereto, said mounting elements being subject to variations in location and including surfaces that are not coplanar comprising:

a lightweight rigid frame for holding said sources and said receptors in proper alignment; and

positioning means for mounting said rigid frame to said mounting elements of said CRT in fixed position, said positioning means including means for compensating for said variations in location of said mounting elements and means for compensating for said surfaces not being coplanar and thereby effectively eliminating stress in said rigid frame when said rigid frame is mounted to said CRT.

4,553,143

LOW COST PANEL DISPLAY ADDRESSING STRUCTURE

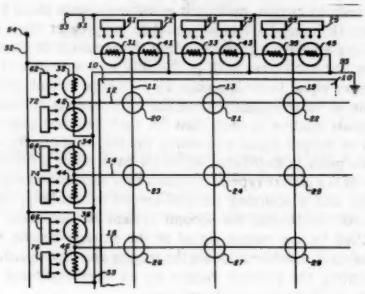
Claude D. Lustig, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 12, 1982, Ser. No. 397,657
Int. Cl.[4] G09G *03/20*
U.S. Cl. 340—719 **5 Claims**

1. A flat panel display comprising:

a scanning discharge light source including: coupling light sources for sequentially illuminating a plurality of coupling photoresistors, said sequential illumination being substantially in synchronism with addressing pulses applied to said coupling photoresistors, and decoupling light sources for sequentially illuminating a plurality of decoupling photoresistors at a predetermined interval subsequent to illumination of said coupling photoresistors;

photoresistor divider means on a first substrate including a plurality of conductive output leads on said first substrate and further including at least one terminal adapted to receive said addressing pulses, for coupling said addressing pulses through selected coupling photoresistors to selected ones of said plurality of conductive output leads upon selective illumination by said coupling light source, wherein said photoresistor divider means comprises said plurality of coupling photoresistors each coupled at a first end to said terminal means and at a second end to each of said plurality of decoupling photoresistors, each of said



decoupling photoresistors is coupled between ground potential and a corresponding one of said plurality of coupling photoresistors, each of said plurality of conductive output leads is coupled to a junction between each of said coupling photoresistors and decoupling photoresistors; and

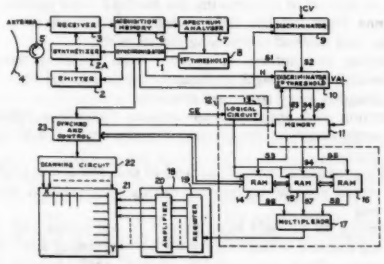
optical display means on a second substrate having a plurality of conductive input leads coupled to said plurality of conductive output leads for providing optical signals in response to said addressing signals.

4,553,144

GROUND SURVEILLANCE DOPPLER RADAR

Charles Houdard, and Guy Le Parquier, both of Boulogne-Billancourt, France, assignors to LMT-Radio Professionnelle, Boulogne-Billancourt, France

Filed Nov. 23, 1982, Ser. No. 443,935
Claims priority, application France, Nov. 24, 1981, 81 21958
Int. Cl.[4] G01S *13/52*
U.S. Cl. 343—7.7 **10 Claims**



1. A ground surveillance Doppler radar of the type comprising a transmitter for transmitting recurrent pulses of given frequency; a receiver for receiving these pulses subject to a Doppler modulation and for supplying an incoming signal formed from video frequency carrier pulses of the same modulation; storage and selection means for isolating in said incoming signal at least one group of recurrent video frequency

pulses corresponding to a given distance gate; spectral analysis means for forming a signal indicating the Doppler modulation lines of the pulses from said group of pulses; a first threshold circuit for discriminating these lines from the noise and for supplying a signal indicating the presence or absence of moving targets in the distance gates; a display means making it possible to locate these targets; and wherein said radar further comprises a discriminator making it possible to classify the detected targets as a function of their speed into classes representing relative degrees of danger; a second threshold circuit receiving k successive binary informations relative to each distance gate for each input signal from the discriminator and the threshold circuit, making it possible to store these k informations (k being an integer equal to or greater than 2) and supplying a binary signal indicating the presence or absence of a target for each class with probability of 1 among k (1 being an integer equal to or less than 2); a storage circuit making it possible to independently store the informations contained in the signals relative to each class for each distance gate and to supply an output signal containing the informations for all the distance gates in sequential series for each class; a fluorescent screen of the matrix type comprising first and second electrode systems; and a scanning control circuit controlling the first system of electrodes, the second system of electrodes being controlled by the output signal of the storage circuit, which thus makes it possible to locate the targets and distinguish those representing the greatest danger by an overbrightness and a flashing or flickering on the screen.

4,553,145

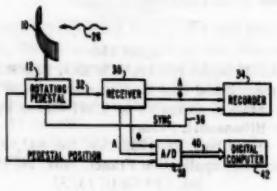
METHOD OF FORMING THE FAR-FIELD BEAM PATTERN OF AN ANTENNA

Gary E. Evans, Trappe, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 31, 1984, Ser. No. 575,643

Int. Cl.⁴ H01Q *3/00*

U.S. Cl. 343—360 **7 Claims**



1. A method of determining the far-field beam pattern of an antenna from antenna field measurements taken at a short range, said method comprising the steps of:

causing said antenna to receive radar signaling having a carrier wavelength λ from a source located at a short range R away from said antenna;

rotating said antenna beam pattern through a rotational angle about the line-of-sight of said source of radar signaling;

taking measurements of the field of said antenna at predetermined angular increments during said rotation thereof; and

forming the far-field beam pattern of said antenna by deriving discrete values thereof for corresponding angle increments along said angular rotation, each discrete value derived as a function of a multiplicity of antenna field measurements taken about the angle increment corresponding thereto, said multiplicity being substantially less than the full spectrum of antenna field measurements corresponding to said angular rotation; whereby method steps of transforming the near-field beam pattern measurements to an antenna aperture distribution to remove phase curvature effects and inverse transforming the corrected aperture distribution to form the desired far-field beam pattern are avoided.

4,553,146

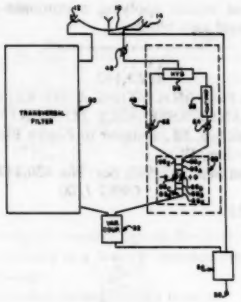
REDUCED SIDE LOBE ANTENNA SYSTEM

Jesse L. Butler, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 19, 1983, Ser. No. 543,669

Int. Cl.⁴ G01S *3/16, 3/28*

U.S. Cl. 343—379 **15 Claims**



1. An antenna system comprising:

A. a first directional antenna;

B. an array of auxiliary antennas, said array being directed in the direction of a single side lobe of the pattern of said first antenna; and

C. a network for combining the signal of said first antenna with the signals of said array so as to reduce energy transmitted or received by said first antenna in the direction of said side lobe.

4,553,147

METHOD AND A LIQUID JET PRINTER FOR GENERATING AT LEAST TWO SEPARATELY DISPOSED POINTS ON A RECORDING MEDIUM

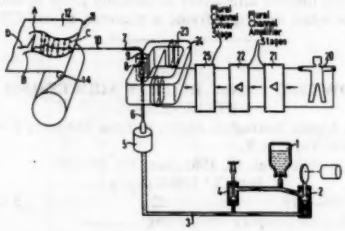
Bruno Slettenmark, Jaerfaella, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,805

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237797

Int. Cl.⁴ G01D *15/18, 9/40, 9/00*

U.S. Cl. 346—75 **16 Claims**



1. In a method for generating at least two separately disposed points on a recording medium of a liquid jet printer, wherein writing fluid is continuously supplied from a nozzle in the direction toward the recording medium with a prescribable speed and, for the purpose of changing between the points, the nozzle is moved at high speed through an angle corresponding to the spacing between the points, the improvement of:

moving the nozzle through said angle upon transition from the one point to the other point according to such a selected time function such that the writing fluid always moves substantially in the direction toward the other point on said recording medium after departing the nozzle, as soon as the nozzle moves away from said one point for preventing printing of writing fluid on said recording medium between said two points.

4,553,148
OPTICAL PRINTER FOR LINE-BY-LINE IMAGE FORMING

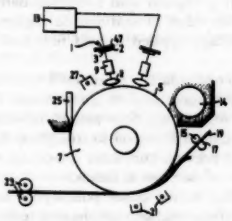
Herbert Behrens, Neuenburg; Jürgen Schmitt, Stadland; Rainer Marx; Helmut Heidemann, both of Wilhelmshaven, and Gerhard Schipper, Rechtsupweg, all of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,399

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1982, 3223031

Int. Cl.[4] G01D *9/42, 15/14*

U.S. Cl. 346—107 R **17 Claims**



1. A printer including a carrier having a light sensitive surface and being driven in a feed direction and an optical printing head for a line-by-line image forming of design and text information; said optical printing head having a plurality of light emitting elements arranged in a row and each having a light emitting surface, said light emitting surfaces being spaced from one another; and an optical device for reproducing the light, emitted by the light emitting elements, in one line on said light sensitive surface; the improvement wherein said light emitting surface of each said light emitting element has, parallel to said feed direction, a dimension several times the dimension, in the feed direction, of image dots to be reproduced on said light sensitive surface, and further wherein said optical device has an image reproducing first optical lens means and a second optical lens means situated between said first optical lens means and said light sensitive surface for reducing the image of the light emitting surface of each light emitting element solely in a direction parallel to said feed direction to a required light dot size on said light sensitive surface.

4,553,149
ELECTROSTATIC IMAGE RECORDING METHOD AND APPARATUS

Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 102,832, Dec. 12, 1979, Pat. No. 4,446,471. This application Sep. 22, 1983, Ser. No. 534,700

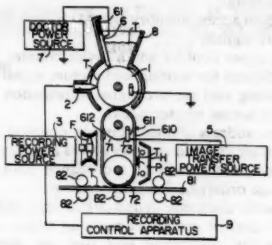
Claims priority, application Japan, Dec. 20, 1978, 53-160643; May 29, 1979, 54-66621

Int. Cl.[4] G01D *15/06*

U.S. Cl. 346—153.1 **9 Claims**

1. A recording method comprising the steps of:

bringing a multi-stylus electrode, to which a pattern signal is applied, into contact with toner having a charge retention property, forming a charge distribution in said toner on a donor, corresponding to said pattern signal to be applied to said multi-stylus electrode, utilizing the charge injection into said toner by said multi-stylus electrode, bringing an image transfer medium capable of having a dielectric layer on an electrically conductive surface thereof into contact with said toner having said charge distribution



corresponding to said pattern signal to form a visible pattern on said image transfer medium, and

transferring said visible pattern to a recording member which can be brought into contact with said image transfer medium.

4,553,150
DRIVING CIRCUIT FOR AN ELECTROSTATIC RECORDING HEAD

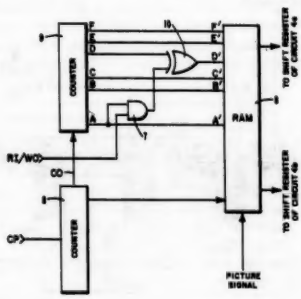
Shunsuke Katahira, Hino, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 21, 1983, Ser. No. 515,763

Claims priority, application Japan, Aug. 26, 1982, 57-148251

Int. Cl.[4] G01D *15/06*

U.S. Cl. 346—154 **8 Claims**



1. A driving circuit for generating control voltages corresponding to a picture image to be recorded by an electrostatic recording head, said driving circuit comprising:

a plurality of pin electrodes grouped into a plurality of multi-electrode arrays positioned on the recording head in the order A_1, B_1, A_2, B_2. . . A_k, B_k . . . , where A designates an odd array and B designates an even array;

first pin electrode control means for supplying to said pin electrodes of said odd arrays control voltages corresponding to the image to be recorded;

second pin electrode control means for supplying to said pin electrodes of said even arrays control voltages corresponding to the image to be recorded;

a plurality of control electrodes, each positioned adjacent at least one associated pin electrode;

control electrode controlling means for supplying to said control electrodes control voltages corresponding to the image to be recorded;

a control electrode order circuit for controlling said control electrode controlling means; and

a pin electrode order control circuit for controlling said first pin electrode control means and said second pin electrode control means, said pin electrode order control circuit comprising:

i. a random access memory (RAM) for storing the recording picture signals;

ii. an upper counter and a lower counter for designating addresses for writing said picture signal information or reading said picture signal information from said random access memory; and

iii. an address control circuit coupled to said upper counter and said random access memory of said picture signal information in accordance with said recorded image order;

said control electrode order circuit and said pin electrode order control circuit comprising order control circuit means for controlling said first pin electrode control means, said second pin electrode control means, and said control electrode controlling means so that the control voltages are supplied to said arrays and said control electrodes in the following order, alternating between odd and even arrays:

A_{N+1}, $B_1 \cdots A_{2N}$, B_N,

A_1, $B_{N+1} \cdots A_N$, B_{2N},

A_{3N+1}, $B_{2N+1} \cdots A_{4N}$, B_{3N},

A_{2N+1}, $B_{3N+1} \cdots A_{3N}$, B_{4N},

where N is an integer greater than or equal to 2.

4,553,151

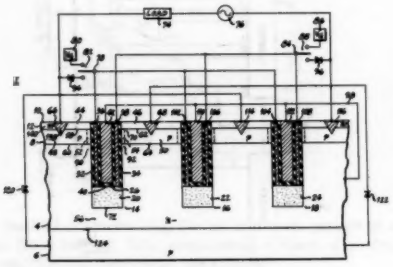
BIDIRECTIONAL POWER FET WITH FIELD SHAPING

Herman P. Schutten, Milwaukee, Wis.; Robert W. Lade, Fort Myers, Fla., and James A. Benjamin, Waukesha, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1982, Ser. No. 421,931

Int. Cl.⁴ H01L *29/10, 29/78, 29/06, 27/02*

U.S. Cl. 357—23.4 **19 Claims**



1. A bidirectional FET, comprising:

a first source region of one conductivity type semiconductor material;

a first channel region of opposite conductivity type semiconductor material forming a junction with said first source region;

a single drift region of said one conductivity type semiconductor material forming another junction with said first channel region;

a second channel region of said opposite conductivity type semiconductor material forming a junction with said drift region;

a second source region of said one conductivity type semiconductor material forming a junction with said second channel region;

notch means extending between and separating said first and second source regions and said first and second channel regions, and extending into said drift region;

insulated gate means in said notch means proximate said first and second channel regions and adapted for application of an electrical potential for producing electric fields of sufficient intensity to invert the conductivity type in said first and second channel regions;

whereby upon application of voltage of either polarity to said first and second source regions, electric current can flow in a respective corresponding direction between them under control of said electrical potential of said gate means, the conductive current path through said drift region traversing along one side of said notch means then around the end thereof then along the other side of said notch means, said FET having an OFF state in the absence of said electric gate potential, said single drift region around said notch means supporting OFF state blocking voltage in both directions;

a field shaping region of said opposite conductivity type semiconductor material forming a junction with said drift region and extending symmetrically thereacross opposite both said channel region junctions with said drift region; and

steering means for referencing said field shaping region to substantially the same potential as one of said source regions for one polarity voltage applied to said first and second source regions, and to substantially the same potential as the other of said source regions for the other polarity voltage applied to said first and second source regions,

such that in one polarity of said OFF state, depletion from said first channel region junction and from said field shaping region junction extend towards each other through said drift region to straighten field lines in the latter and prevent curvature crowding of field lines at the edges of said notch means,

and such that in the other polarity of said OFF state, depletion from said second channel region junction and from said field shaping region junction extend towards each other through said drift region to straighten field lines in the latter and prevent curvature crowding of field lines at the edges of said notch means.

4,553,152

MONOLITHIC INFRARED RAY CHARGE TRANSFER ELEMENT

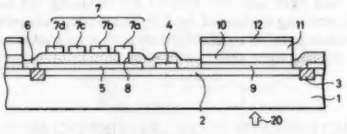
Kazuo Nishitani, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 548,755

Claims priority, application Japan, Nov. 6, 1982, 57-195441

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—24 **6 Claims**



1. A monolithic infrared ray charge transfer element comprising: a semiconductor substrate, a semiconductor layer formed on said semiconductor substrate, a charge transfer element consisting of Schottky barrier transfer gates formed directly on a first area of said semconductor layer, signal line conductors contacting said gates, and an infrared detector element directly formed on a second area of said semiconductor layer; wherein said semiconductor layer is formed of a material selected from the group consisting of gallium and silicon and said infrared ray detecting element is formed of a layer of cadmium telluride and of a material selected from the group consisting of mercury cadmium telluride and lead tin telluride, said material is formed on said layer of cadmium

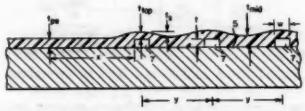
telluride which in turn is formed on said second area of said semiconductor layer.

4,553,153

PLANARIZING LAYER FOR SEMICONDUCTOR SUBSTRATES SUCH AS SOLID STATE IMAGERS

William C. McColgin, Pittsford, and Laurel J. Pace, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,154
Int. Cl.⁴ H01S *3/00*
U.S. Cl. 357—30 **13 Claims**



1. In a device comprising a semiconductor substrate including an array of circuit elements having a non-planar topography, the device including a planarizing layer permanently covering said circuit elements;

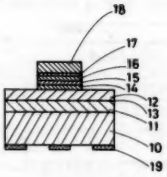
the improvement wherein said planarizing layer comprises a composition prepared from a monomer that produces, on a test substrate comprising a planar surface from which projects a topography of measurable height t, undulations in the top surface of said planarizing layer that have a height t_2 less than or equal to said height t of the topography of said substrate, less one-half the height t_{pe} of the planarizing layer measured on a smooth, planar portion of said substrate.

4,553,154

LIGHT EMITTING DIODE ELECTRODE

Katsumi Tsujii, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 337,289, Jan. 5, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 681,710
Claims priority, application Japan, Jan. 13, 1981, 56-4494; Jan. 13, 1981, 56-4495
Int. Cl.⁴ H01L *23/48*
U.S. Cl. 357—71 **12 Claims**



1. An electrode adapted for a semiconductor device, comprising:

a first layer being disposed on the semiconductor device and comprising material selected from the group consisting of Au-Be and Au-Zn for providing an ohmic contact with the semiconductor device;

a second layer of TiN adjacent said first layer;

a third layer of Ti adjacent said second layer;

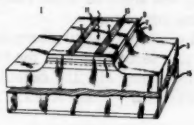
a fourth layer of Al adjacent said third layer of Ti; and an external lead for said semiconductor device bonded to said Al layer.

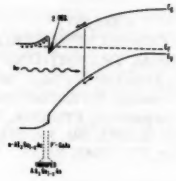
4,553,155

HIGH SPEED BIAS-FREE PHOTODETECTOR

Chung Y. Chen, Scotch Plains, and Alfred Y. Cho, Summit, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 389,778, Jun. 18, 1982,. This application Mar. 22, 1984, Ser. No. 592,724
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 357—30 **17 Claims**





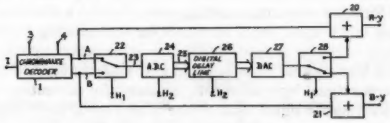
1. A photodetector comprising: a first layer comprising a first semiconductor having a first conductivity type; a second layer comprising a second semiconductor having a second conductivity type; a semi-insulating substrate; said first and second layers forming a p-n junction and being disposed on said substrate; the first of said layers having a first electrode for connection to an external electrical circuit; and a second electrode on said substrate for connection to an external electrical circuit.

4,553,156

CIRCUIT AND PROCESS FOR CHROMINANCE DECODING WITH ANALOG OR DIGITAL DELAY LINE IN A TELEVISION SYSTEM OF A PAL OR SECAM TYPE

Patrick Douziech, Rives sur Fures, and Michel Imbert, Seyssin, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 8, 1983, Ser. No. 559,607
Claims priority, application France, Dec. 10, 1982, 82 20775
Int. Cl.⁴ H04N *9/50, 9/47, 9/40*
U.S. Cl. 358—24 **5 Claims**



1. A process for manufacturing a chrominance decoding circuit, comprising the following steps;

using a conventional chrominance decoding circuit formed more especially from an integrated circuit whose two terminals are intended to be connected to a conventional analog delay line and whose two output terminals are intended to supply the chrominance signals B—Y and R—Y,

not connecting the analog delay line,

connecting the outputs of the circuit to a digital-delay line matching circuit comprising:

a first channel connecting the first output terminal to a first input of a first summator,

a second channel connecting the second output terminal to a first input of a second summator,

a third channel comprising successively:

a switch with two inputs and one output in which each input is connected alternately to each of the outputs of the integrated circuit, at a frequency H1,

an analog-digital convertor actuated at a frequency H2,

a digital delay line actuated at the frequency H2,

a digital-analog convertor,

a switch with one input and two outputs, each output being connected to a second input of the first and second summators at frequency H1, the outputs of the summators supplying signals B−Y and R−Y.

4,553,157

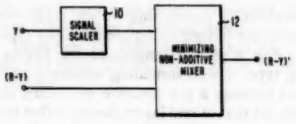
APPARATUS FOR CORRECTING ERRORS IN COLOR SIGNAL TRANSITIONS

Robert N. Hurst, Jr., Hopewell Borough, and Robert A. Dischert, Burlington Township, Burlington County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 5, 1983, Ser. No. 558,373

Int. Cl.⁴ H04N 9/535

U.S. Cl. 358—27 **14 Claims**



1. In a color television receiver for processing composite color video signals inclusive of a wide bandwidth luminance signal component and a relatively narrow bandwidth chrominance signal component, said color television receiver including: chrominance signal processing means responsive to said chrominance signal component for developing a plurality of color information signals of color difference signal form, each of lesser bandwidth than said wide bandwidth luminance signal; a matrix having a plurality of color difference signal input terminals for algebraically combining said wide bandwidth luminance signal with respective color difference signals appearing at said plurality of color difference signal input terminals to form a set of color information signals or primary color signal form; an image reproducing means having a plurality of primary color signal input terminals for reproducing a color image in response to respective color information signals of primary color signal form appearing at said plurality of primary color signal input terminals; apparatus for correcting the color information signal input to one of said signal input terminals, said correcting apparatus comprising:

means responsive to said wide bandwidth luminance signal for providing a wide bandwidth color limit signal proportional to said luminance signal;

signal combining means accepting a color information signal and said color limit signal as input signals and providing an output signal which has instantaneous amplitude values proportional to the least of the instantaneous amplitude values of its input signals; and

means for utilizing said output signal to form a corrected color information signal for delivery to said one signal input terminal.

4,553,158

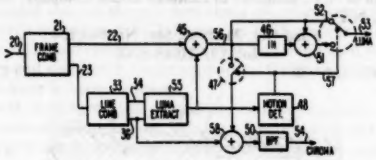
CIRCUITRY FOR CORRECTING MOTION INDUCED ERRORS IN FRAME COMB FILTERED VIDEO SIGNALS

Alfonse Acampora, Staten Island, N.Y., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 6, 1984, Ser. No. 577,505

Int. Cl.⁴ H04N 9/535, 5/21

U.S. Cl. 358—31 **9 Claims**



1. Apparatus for correcting interframe motion induced signal distortion in comb filtered luminance signal derived from a frame-to-frame comb filter, which filter provides comb filtered luminance signal and comb filtered chrominance signal, comprising:

means responsive to said comb filtered chrominance signal for extracting wide band interframe image motion induced luminance cross components therefrom;

signal combining means responsive to the comb filtered luminance signal and said extracted wide band luminance cross components for inserting said cross components into the comb filtered luminance signal to produce corrected luminance signal;

a luminance output terminal;

an interline luminance comb filter responsive to said corrected luminance signal for removing interframe image motion induced chrominance cross components therefrom; and

means for coupling said interline luminance comb filter to said luminance output terminal.

4,553,159

COLOR TELEVISION CAMERA COMPRISING A TRICHROME MATRIX FILTER

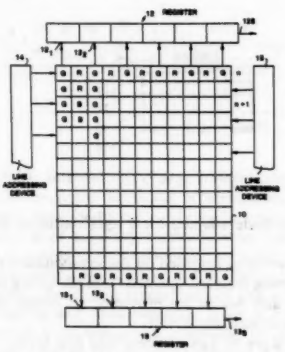
Jean-Yves Morallion, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Feb. 16, 1983, Ser. No. 467,050

Claims priority, application France, Feb. 19, 1982, 82 02792

Int. Cl.⁴ H04N 9/07

U.S. Cl. 358—44 **3 Claims**



1. A color television camera comprising:

a trichrome matrix filter covering a photosensitive matrix;

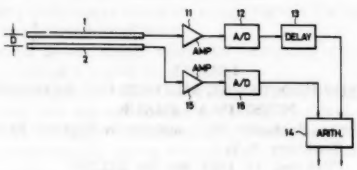
the matrix filter having vertical bands and horizontal lines defining adjacently positioned color elements; elements of a first color located in all alternating bands; second and third color elements intermixed in second remaining alternating bands in a repeated pattern; and a first charge coupled register for reading the first alternating bands on a line by line basis; and a second charge coupled register for reading the second alternating bands on a line by line basis; wherein all stages of first register include at any instant of time data corresponding to elements of the first color; and further wherein all stages of the second register include at sequential instants of time, data corresponding to elements of the second and third colors, respectively.

4,553,160

PICTURE DATA READING DEVICE

Tadashi Yamamoto, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,663
Claims priority, application Japan, Apr. 23, 1982, 57-67332
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—75 **7 Claims**



1. A picture data reading device, comprising:

an optical system for scanning an original line by line and for forming the image of picture data of a scanned position at a plurality of positions;

one-dimensional image sensors respectively arranged at the image forming surfaces of said optical system, for subjecting picture data to photo-electric conversion for each line;

means for binary-encoding picture signals outputted by said one-dimensional image sensors; and

delay means for receiving, from among said picture signals thus binary-encoded, a picture signal other than one which is latest in reading in an auxiliary scanning direction, and for delaying said picture signal thus received by a time corresponding to the number of lines corresponding to a reading position difference between said picture signal and said latest picture signal.

4,553,161

UPSTREAM DATA PACKET TIME SLOT SYNCHRONIZATION WITH DOWNSTREAM VBI FOR TWO-WAY CATV SYSTEM

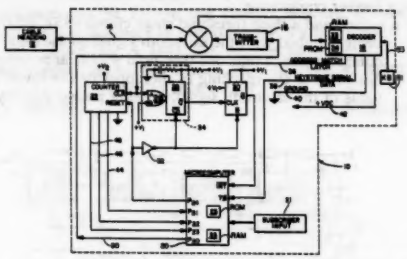
Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 560,028, Dec. 9, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 648,569
Int. Cl.⁴ H04N *7/10, 7/14*
U.S. Cl. 358—86 **16 Claims**

1. A time sloted aloha two-way CATV system wherein video signals having a vertical rate signal component are transmitted downstream on a cable from a headend to a plurality of subscriber terminals and each subscriber terminal may in turn transmit upstream data packets to said headend on said cable, said system comprising:

signal detection means for detecting said vertical rate signal component and generating a timing reference signal in response thereto; and

signal processing means coupled to said signal detection means and responsive to said timing signal for dividing the next succeeding raster scan field into a plurality of equal time slots in predetermined time relation to said timing



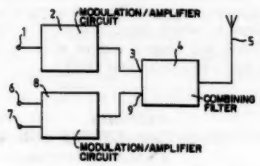
signal in which said data packets may be inserted for upstream transmission.

4,553,162

TELEVISION TRANSMITTER

Geoffrey C. Peel, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,117
Claims priority, application United Kingdom, Dec. 17, 1982, 8236036
Int. Cl.⁴ H04W *7/04, 5/38*
U.S. Cl. 358—144 **3 Claims**



1. A television transmitter comprising a vision signal amplifier, a sound signal amplifier, a sound and vision combining filter, means for generating two frequency modulated sound carrier signals, and means for feeding the frequency modulated sound carrier signals to the sound signal amplifier, characterized in that the sound signal filter in the combining filter is narrow band and that to reduce the effect of the amplitude modulation due to frequency modulation produced in the combining filter, said television transmitter further comprises means for amplitude modulating the two frequency modulated sound carrier signals in the opposite sense to that produced by said combining filter prior to or within said sound signal amplifier.

4,553,163

INTEGRATED CIRCUIT FOR COLOR TELEVISION RECEIVERS

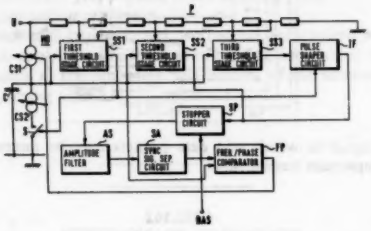
Wolfgang Sauer, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 651,647, Sep. 17, 1984, abandoned, which is a continuation of Ser. No. 389,516, Jun. 17, 1982, abandoned. This application Feb. 27, 1985, Ser. No. 705,864
Claims priority, application European Pat. Off., Jul. 8, 1981, 81105291.9
Int. Cl.⁴ H04N *5/04*
U.S. Cl. 358—158 **6 Claims**

1. An integrated circuit for color television receivers, comprising a voltage- or current-controlled horizontal sweep generator (HO), an amplitude filter (AS), a synchronizing-signal separating circuit (SA) and a frequency/phase comparator (FP) which serves to synchronize the horizontal sweep genera-

tor (HO), with said generator being a sawtooth generator containing a single capacitor (C) and a first threshold stage circuit (SS1) having two fixed thresholds, said integrated circuit further comprising:

a second and a third threshold stage circuit (SS2, SS3) each being supplied with the sawtooth signal on the input side, comprising each time one threshold which, approximately 2μs prior to the reaching of the upper or the lower peak value of the sawtooth signal, is being passed thereby;



a pulse shaper circuit (IF) coupled to the output of said third threshold stage circuit (SS3) which pulse shaper circuit reduces the duration of the output pulse thereof to about the duration of the output pulse of said second threshold stage circuit (SS2), and

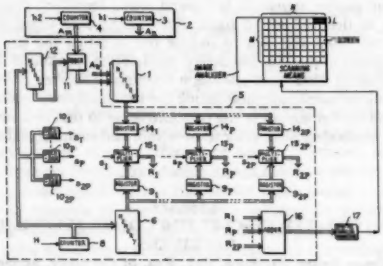
a stopper circuit (blocking stage) (SP) coupled to the outputs of both said pulse shaper circuit (IF) and said second threshold stage circuit (SS2), said stopper circuit having a signal input to which there is applied a composite video signal (BAS) and a signal output which is coupled to the input of said amplitude filter (AS).

4,553,164

SPATIAL CORRECTION DEVICE FOR AN IMAGE ANALYZER

Georges Labb, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 13, 1982, Ser. No. 417,592
Claims priority, application France, Oct. 2, 1981, 81 18638
Int. Cl.⁴ H04N *5/14*
U.S. Cl. 358—163 **4 Claims**



1. A spatial correction device for supplying a correction signal to an image analyzer having a screen divided into M groups of L lines each and N columns thereby forming MN rectangles and scanning means for scanning said screen, said device comprising:

a correction memory for storing, for each of the MN rectangles, a predetermined correction signal;

a sequencer for addressing the correction memory for applying a correction signal corresponding to each of said MN rectangles scanned by said scanning means; and

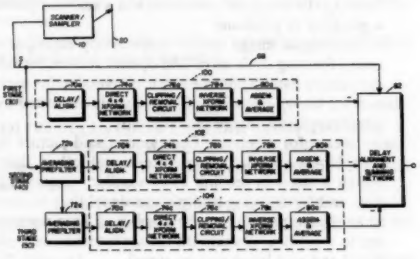
interpolation means coupled to said correction memory for calculating a value of the correction signal to be applied during passage of the scanning means through each of the L lines of each of said rectangles, so as to avoid derivative ruptures of the correction signal during transitions between said each rectangle and the adjacent rectangles situated in the same column, wherein said interpolation means comprises a means for restituting successively during the passage of the scanning means through each of the lines of said rectangle, the values of the correction signals stored in the correction memory associated with 2P−1 (P being an integer greater than 0) rectangles situated on each side of said each rectangle scanned by the scanning means, means for storing 2P smoothing coefficients associated with each line of said each rectangle scanned by the scanning means, and for restituting the 2P smoothing coefficients during the passage of the scanning means through each line of a rectangle, and means for calculating the sum of the 2P correction signals weighted by the corresponding smoothing coefficients wherein said means for calculating the sum of the 2P correction signals supplies the output signal of the interplation means.

4,553,165

TRANSFORM PROCESSING METHOD FOR REDUCING NOISE IN AN IMAGE

Bryce E. Bayer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1983, Ser. No. 522,284
Int. Cl.⁴ H04N *1/40, 5/14*
U.S. Cl. 358—167 **21 Claims**



1. A method of processing an image for noise reduction, comprising the steps of:

generating image signals representative of the light value of elements of the image;

forming the image signals into signal arrays each aligned to a group of image elements;

transforming each array of image signals into a set of coefficient signals corresponding to combinations of image signals representative of a smoothed light value over an image region including said group of image elements and differences in light value within said group of image elements;

selecting a subset of coefficient signals that represent differences in light value between elements of the image and a smoothed light value over an image region smaller than the area defined by said group of image elements;

modifying one or more of the coefficient signals in said selected subset in order to reduce noise in the processed image; and

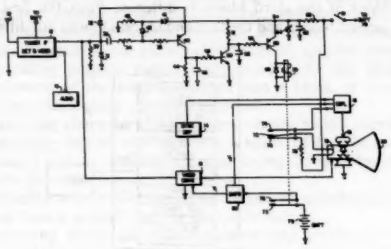
generating a processed image of reduced noise from said modified subset of coefficient signals.

4,553,166

VIDEO SYSTEM WITH AUTOMATIC POWER UP

Leroy A. Sutton, Wheeling, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 7, 1983, Ser. No. 559,166
Int. Cl.[4] H04N *3/18*
U.S. Cl. 358—190 8 Claims



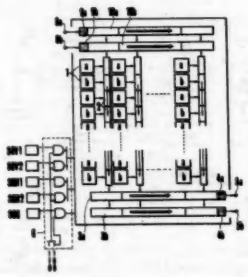
1. A high brightness video system comprising:
a CRT including a filament circuit;
first power supply means for energizing said filament circuit at a below normal level;
second power supply means for energizing said filament circuit at a normal level; and
means responsive to an input signal for switching between said first and said second power supply means, said first power supply means comprising a battery and said second power supply means comprising a switch mode power supply.

4,553,167

IMAGE SIGNAL PROCESSING DEVICE

Takao Kinoshita, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 406,060
Claims priority, application Japan, Aug. 8, 1981, 56-124215; Aug. 8, 1981, 56-124216; Aug. 21, 1981, 56-131085; Sep. 4, 1981, 56-140014; Sep. 8, 1981, 56-141535; Sep. 9, 1981, 56-142818; Sep. 10, 1981, 56-142641; Sep. 12, 1981, 56-144270
Int. Cl.[4] H04N *5/78*
U.S. Cl. 358—213 6 Claims



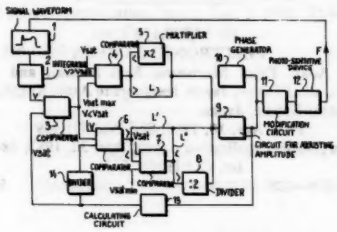
1. An image signal processing device comprising:
(a) memory means, storing image information constituting lines and rows;
(b) register means for storing information in two adjacent lines in the memory means; and
(c) control means for entering information in one of the two adjacent lines of the register means into the memory means and reading the information from the other of the two adjacent lines in the register means.

4,553,168

METHOD AND APPARATUS FOR ADJUSTING THE OPERATING CONDITIONS OF A PHOTOSENSITIVE CHARGE TRANSFER DEVICE

Jacques Chautemps, St. Egreve, and Pierrick Descure, Biviers, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 6, 1983, Ser. No. 558,506
Claims priority, application France, Dec. 10, 1982, 82 20763
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 6 Claims



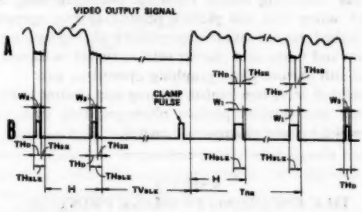
1. A method of adjusting the operating conditions of a photosensitive charge transfer device having a photosensitive zone which is constituted by charge transfer registers each having electrodes connected to a periodic bias voltage which creates potential wells having a saturation value fixed by said bias voltage, the improvement wherein the method consists in cyclically integrating the charges induced by the light image to be scanned, and, during each integration cycle, in calculating the total amplitude of the signal corresponding to said image, in comparing said calculated amplitude with a threshold amplitude value which is a function of said saturation value fixed by said bias voltage, and in modulating the amplitude of said potential wells created by said bias voltage as a function of the result of said comparison.

4,553,169

CLAMP CIRCUIT FOR USE IN VIDEO CAMERA HAVING IMAGE PICK-UP DEVICE

Osamu Yoshioka; Isao Kajino, both of Kanagawa, and Seisuke Yamanaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 564,029
Claims priority, application Japan, Dec. 29, 1982, 57-234233
Int. Cl.[4] H04N *5/30*
U.S. Cl. 358—221 6 Claims



1. A clamp circuit for use in a video camera which has an area for detecting pictures and which has a horizontal blanking interval and vertical blanking interval and which has an image pick-up device, said image pick-up device having a first optical black-detecting portion, which is mounted outside said area for detecting pictures, said clamp circuit receiving said output signal from said image pick-up device, and comprising:
a clamp switch operated at a horizontal scanning frequency

and receiving said output signal from said image pick-up device;

a clamp voltage source connected to said clamp switch to operate it so as to clamp said output signal to a level equal to the voltage supplied by said clamp voltage source; and

a clamp pulse generating means for generating a train of clamp pulses and controlling said clamp switch, the pulse width of at least one of said clamp pulses which is supplied immediately after said vertical blanking interval being greater than that of clamp pulses which are not supplied immediately after said vertical blanking interval.

4,553,170

ELECTRONIC CAMERA

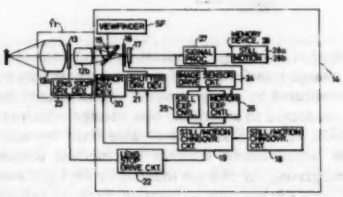
Harumi Aoki; Tahei Morisawa; Koji Suzuki, and Kimiaki Ogawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Apr. 18, 1984, Ser. No. 601,469

Claims priority, application Japan, Apr. 30, 1983, 58-76472

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—225 **5 Claims**



1. An electronic camera in which a still picture photographing operation and a motion picture photographing operation can be switched over to each other, comprising:

an image reflecting mirror for introducing a light beam passing through a photographing lens to viewfinder means in a still picture photographing operation;

a first drive mechanism for driving said image reflecting mirror;

a still picture photographing focal plane shutter disposed in front of an image pickup device;

a second drive mechanism for driving said focal plane shutter;

a changeover switch for selecting between said still picture photographing operation and said motion picture photographing operation; and

a shutter release switch used for both of said photographing operations,

said first drive mechanism being activated to retract said image reflecting mirror from the photographing optical path when said still picture photographing operation is switched over to said motion picture photographing operation and when said shutter release switch is turned on in said still picture photographing operation, and

said second drive mechanism causing said shutter to be open when said motion picture photographing operation is selected by said changeover switch.

4,553,171

TILE ENCODING IN IMAGE PRINTING

Thomas M. Holladay, Webster, N.Y., and L. Bayles Holt, San Jose, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1984, Ser. No. 574,506

Int. Cl.⁴ H04N *1/00*

U.S. Cl. 358—263 **7 Claims**

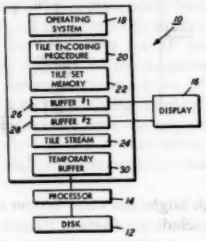
1. A method for displaying a digital image comprising the steps of

(a) segregating the digital image into a plurality of blocks of pixels,

(b) assigning a first identifier associated with the first block of pixels,

(c) comparing the second block to the first block and assigning a second identifier with the block if the blocks are different and assigning the first identifier to the second block if the blocks are identical,

(d) comparing the third block to the first and second blocks and assigning a third identifier associated with the third block if the third block is different from the first and second blocks and the first and second blocks are different



and assigning the associated identifier of either the first or second block to the third block if the third block is identical to either the first or second block,

(e) repeating the sequence for said plurality of blocks,

(f) preparing a block set for each nonidentical block, correlating the block set with the associated identifier,

(g) preparing a block set stream of identifiers associated with each successive block of the image, and

(h) displaying the image by scanning the identifiers in the block set stream and loading the associated block sets into a display buffer.

4,553,172

PICTURE SCANNING AND RECORDING METHOD

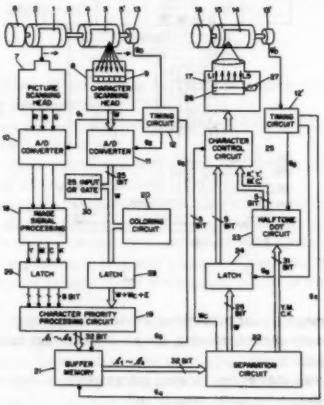
Mitsuhiko Yamada, and Toshiaki Nakade, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 3, 1983, Ser. No. 471,869

Claims priority, application Japan, Mar. 13, 1982, 57-39877

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—280 **7 Claims**



2. A method of scanning an original picture and a character document and recording a synthesized image on a photosensitive material, comprising the steps of:

photoelectrically scanning at the same time the original picture and the character document in a subscanning direction when the original picture and character document are in a predetermined positional relationship with respect to each other and are synchronized in a main scanning direction;

producing in parallel from said photoelectric scanning graphic signals corresponding to picture elements from the original picture and character signals corresponding to picture elements from the document, wherein a matrix of multiple picture elements from the document positionally corresponds to one picture element of the original picture;

organizing graphic signals corresponding to one picture element of the original picture into a block of data in accordance with a first data format;

organizing character signals corresponding to the matrix of multiple picture elements into a block of data in accordance with a second data format having the same length as the first data format;

providing a discrimination signal to indicate whether a block of data is graphic data or character data;

presenting blocks of data simultaneously produced from graphic signals and character signals in parallel to a circuit means for priority processing which prevents graphic data from passing therethrough to a memory device whenever the discrimination signal indicates character data is also present, thereby allowing the character data to have priority in passing therethrough to the memory device; and

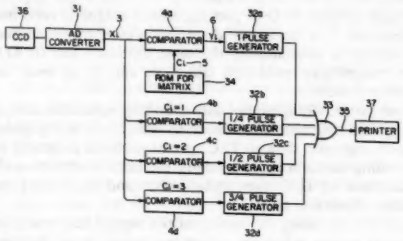
operating plural exposure beams of light in accordance with the data which has passed through the priority processing means to the memory device to record the synthesized image on the photosensitive material, wherein the plural exposure beams reproduce plural picture elements from the character document simultaneously and reproduce individual picture elements from the original picture through subdivision of each such element in a matrix of multiple fine elements.

4,553,173

IMAGE PROCESSING APPARATUS

Naoto Kawamura, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,264
Claims priority, application Japan, Dec. 26, 1981, 56-209563
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **18 Claims**



1. An image processing apparatus comprising:

A/D converting means for A/D converting an input analog image signal;

threshold level signal generating means for generating a threshold level signal; and

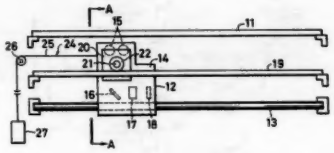
output means for outputting a reproduction signal from an image signal from said A/D converting means and the threshold level signal, said output means having controlling means for controlling the reproduction signal so that a dot pitch of an image recorded or displayed in accordance with the reproduction signal is substantially constant; wherein said controlling means controls the reproduction signal in accordance with the image signal and the threshold level signal generated by said threshold level signal generating means; and wherein said controlling means has pulse width mdoulating means for changing a pulse width of the reproduction signal in accordance with the threshold level signal.

4,553,174

DRIVE DEVICE IN A PLANE READING DEVICE

Fujio Moriguchi, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,365
Claims priority, application Japan, Jan. 8, 1982, 57-913
Int. Cl.⁴ H04N *1/04*
U.S. Cl. 358—285 **6 Claims**



1. In a plane reading device in which the image data of an original placed on a platen are read by a reading mechanism moved with respect to said platen; a drive device comprising:

a rack arranged parallel to said platen;

a stepping motor provided on said reading mechanism;

a pinion mounted on an output shaft of said stepping motor and engaged with said rack; and

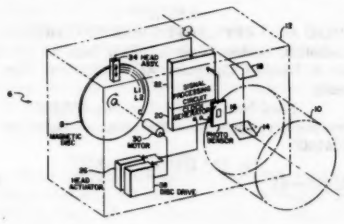
a backlash eliminating mechanism for eliminating backlash between said rack and said pinion.

4,553,175

METHOD/APPARATUS FOR PLAYBACK OF COLOR VIDEO STILL PICTURES FROM A MAGNETIC DISK

Hans-Peter Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,035
Int. Cl.⁴ H04N *5/781*
U.S. Cl. 358—310 **10 Claims**



1. Apparatus for playing back a color video signal composed of separate color and luminance component signals recorded on respective color and luminance tracks on a recording medium, said apparatus comprising:

a playback head;

means for positioning said head adjacent either the color track or the luminance track;

means responsive to the position of said head adjacent the color track for reading the color component signal;

means for storing the color component signal;

means responsive to the position of said head adjacent the luminance track for reading the luminance component signal; and

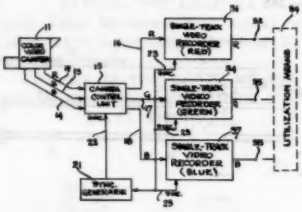
means for generating the color video signal from a combination of the stored color component signal and the luminance component signal.

4,553,176

VIDEO RECORDING AND FILM PRINTING SYSTEM QUALITY-COMPATIBLE WITH WIDESCREEN CINEMA

James A. Mendrala, 1048 Hollister St., San Fernando, Calif. 91340

Filed Dec. 31, 1981, Ser. No. 336,452
Int. Cl.[4] H04N 9/495
U.S. Cl. 358—334 **32 Claims**



1. A method of color video recording in preparation for image transfer to motion picture film, the method comprising the steps of:

generating a multiplicity of video frames in sequence, each video frame comprising a set of three simultaneous independent video primary color signals, each set containing image information that corresponds to a single visual image in color;

recording the set of three independent primary color signals for each frame simultaneously on three corresponding independent monochrome storage channels of a video signal triple parallel-readout storage medium;

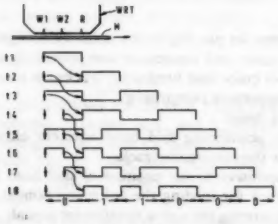
after the recording step, transferring the signals from at least two of the three storage channels to sequential-readout video storage means, by editing at least two of each set of three simultaneous signals from the parallel-readout storage medium into a set of corresponding sequential signal frames on the sequential-readout storage means.

4,553,177

METHOD AND APPARATUS FOR RECORDING DATA

Peter Scholich, Schloss-Neuhaus, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 550,243
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1982, 3241400
Int. Cl.[4] G11B 5/09, 5/27
U.S. Cl. 360—43 **5 Claims**



1. A method of writing data on a magnetic storage medium which travels relative to a magnetic head of the type having a first write gap and a read gap spaced apart along a travel axis by a distance which establishes a bit spacing in the medium, and a second write gap between the first write gap and the read gap, which method comprises the steps of:

A. causing relative movement between the head and medium along the travel axis;

B. actuating the first write gap to cause a flux transition in the medium;

C. generating a signal representing the arrival of said flux transition at the read gap; and

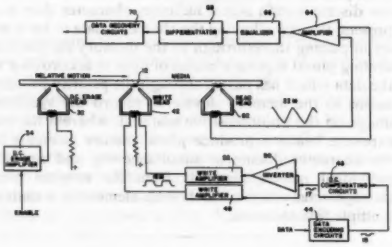
D. using said signal to substantially contemporaneously activate the first write gap to cause a second flux transition which, in combination with the first transition, represents a data value.

4,553,178

MAGNETIC RECORDING SYSTEM WITH PEAK SHIFT COMPENSATION

Donald F. Lynch, Littleton, Colo., assignor to Electronic Processors, Inc., Englewood, Colo.

Filed Jan. 18, 1983, Ser. No. 458,965
Int. Cl.[4] G11B 5/09
U.S. Cl. 360—45 **4 Claims**



1. A system for writing digital data on magnetic recording medium which is D.C. premagnetized in a substantially single polarized direction, which system compensates to avoid peak shift during read-out due to the subsequent magnetic recording of data on said medium which magnetic data traverses said medium in substantially the said polarized direction as the polarized direction of D.C. premagnetization, said system including:

a magnetic write head transducer for selectively applying magnetic data to D.C. premagnetized magnetic recording medium in a polarized direction which traverses such medium in substantially the same direction and its D.C. premagnetized polarized direction and in at least one other direction;

means for providing digital data encoding signals for activating said magnetic transducer to selectively apply polarized magnetic data to D.C. premagnetized magnetic recording medium in subsantially the same direction as the direction of D.C. premagnetization and in at least one other direction; and

means for adjusting the timing of the digital data encoding signal means when its activating signal is of the kind which would activate said magnetic transducer to apply magnetic data to D.C. premagnetized magnetic recording medium in substantially the same direction of polarization as the direction of the polarized D.C. premagnetization of said medium, wherein said timing adjusting means includes a resistor, a capacitor, and a first and second inverter, said resistor and said capacitor being in parallel with one another, said resistor and capacitor also both being in series with said signal encoding means, and wherein said first inverter is located in series between said signal encoding means and said resistor and capacitor and said second inverter is located in series after said resistor and capacitor; whereby peak shift due to the recording of data which traverses D.C. premagnetized magnetic me-

dium in substantially the same polarized direction as the polarized direction of D.C. premagnetization of said medium is compensated to avoid shift in the read-out of data recorded on said D.C. premagnetized magnetic medium.

4,553,179

AUTOMATIC RECORDING BIAS CURRENT SETTING APPARATUS

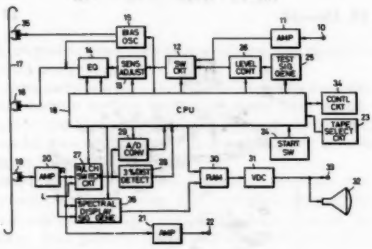
Mamoru Inami, Yokohama; Zenju Ohtsuki, Tokyo; Yoshiaki Tanaka, Fujisawa; Tomohiro Mori, and Akio Hasegawa, both of Maebashi, all of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

Filed Oct. 13, 1982, Ser. No. 434,101

Claims priority, application Japan, Oct. 15, 1981, 56-164501; Dec. 2, 1981, 56-194247

Int. Cl.⁴ G11B *15/02, 5/47*

U.S. Cl. 360—66 **14 Claims**



1. An automatic recording bias current setting apparatus in a magnetic recorder for recording and reproducing an audio signal on and from a magnetic recording medium which is arbitrarily selected from among different types of magnetic recording mediums, said apparatus comprising:

bias current generating means for generating a bias current with varied level of the bias current;

testing signal generating means for sequentially generating two kinds of testing signals having different mid and high frequencies of the audio signal, said testing signal generating means including means for varying the levels of the testing signals;

recording and reproducing means for recording said two kinds of testing signals with said bias current onto the selected magnetic recording medium and for reproducing the same, said recording and reproducing means repeating an operation in which the two kinds of testing signals whose levels have been varied are recorded on the recording medium under the same bias current and are then reproduced, with respect to two or more different bias currents; and

bias current setting means for detecting the the levels of the testing signals reproduced by the recording and reproducing means, and for setting the output bias current of said bias current generating means to an optimum level for the selected recording medium;

said bias current setting means having MML detecting means for detecting maximum modulation levels of the mid frequency testing signal for said two or more different bias currents, respectively, wherein the maximum modulation levels are output levels reproduced with a predetermined distortion factor, and SOL detecting means for detecting saturation output levels from among the detected levels of the high frequency testing signal for said two or more different bias currents, respectively,

said bias current setting means detecting a bias current level at a point where a difference between a respective said maximum modulation level and a respective said saturation output level for the same bias current level becomes equal to a preset predetermined value, and setting the thus detected bias current level as said optimum level for the selected recording medium.

4,553,180

RECORDING START POSITION SETTING DEVICE FOR USE IN A TAPE RECORDER

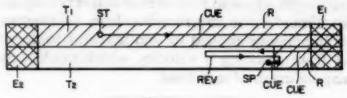
Tsunao Hasegawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 347,856, Feb. 11, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 646,491

Claims priority, application Japan, Feb. 12, 1981, 56-19331; Feb. 16, 1981, 56-21011

Int. Cl.⁴ G11B *15/00*

U.S. Cl. 360—74.4 **2 Claims**



1. A recording start position setting device for a tape recorder, comprising:

cue mode operation instruction means for instructing implementation of a cue mode operation for movement in a first direction of a tape in said tape recorder in response to a control start signal;

signal detection means for detecting from a playback head data recorded on a magnetic tape;

first means for instructing implementation of a review mode operation, said review mode operation causing movement in a second direction of said tape:

when said signal detection means fails to detect recorded data from the playback head for more than a first predetermined period of time during said cue mode operation;

second means for instructing implementation of a play mode operation for said first direction movement of said tape when said signal detection circuit detects recorded data from the playback head during the review mode operation, and for instructing the halting of the play mode operation when the play mode operation is implemented for more than a second predetermined period of time;

a tape end detection circuit for detecting a tape end and producing an end signal; and

third means for instructing implementation of the review mode operation when the end signal is produced during the cue mode operation, said second means being enabled by the review mode implemented by said first means or said third means.

4,553,181

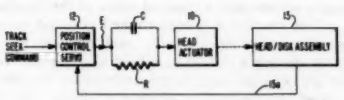
DISK DRIVE POSITIONING SYSTEM PROVIDING FAULT-FREE PROTECTION AGAINST ENDSTOP HEAD CRASHES BY USE OF A PASSIVE NETWORK IN THE ACTUATOR DRIVING SIGNAL PATH

Eugenio Berti, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 12, 1983, Ser. No. 512,873

Int. Cl.⁴ G11B *21/02*; G05G *5/00*

U.S. Cl. 360—75 **9 Claims**



1. In a disk drive system, the combination comprising:

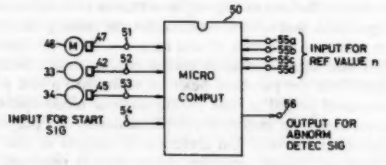
a head/disk assembly including a rotatable disk and a radially movable head cooperating therewith;
said head/disk assembly providing a position signal indicative of the radial position of said head;
a head actuator for radially positioning said head relative to said disk in response to applied electrical energy;
a position control servo responsive to said position signal for producing a servo output signal;
a passive network interposed between said position control servo and said head actuator such that said servo output signal causes electrical energy to be applied to said actuator via said network, said servo output signal having a maximum amplitude which in the absence of said network would cause said head to reach a velocity which could result in a damaging crash of said head;
said passive network being chosen in conjunction with said servo output signal so that, even if said servo signal rises to its maximum value and remains there, said network will limit the energy applied to said actuator to prevent said head from reaching a velocity which could result in a damaging crash of said head.

4,553,182

DEVICE FOR DETECTING ABNORMALITIES IN TAPE TRAVEL

Shuichi Narita, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Sep. 26, 1983, Ser. No. 535,852
Claims priority, application Japan, Sep. 28, 1982, 57-169237
Int. Cl.⁴ G11B *15/00, 15/54*
U.S. Cl. 360—96.1 **5 Claims**



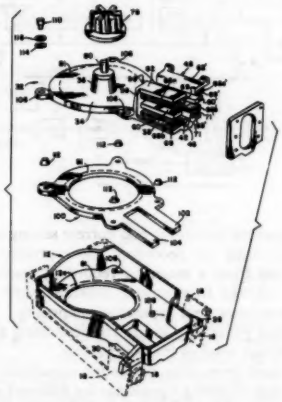
1. A detecting device for detecting abnormality in the tape travel, said detecting device comprising:
first detecting means for detecting capstan rotation pulses which have a frequency in accordance with the rotational speed of a capstan which drives and causes a tape to travel;
second detecting means for detecting supply reel rotation pulses which have a frequency in accordance with the rotational speed of a supply reel which pays out the tape;
third detecting means for detecting take-up reel rotation pulses which have a frequency in accordance with the rotational speed of a take-up reel which takes up the tape; and
abnormality detecting means supplied with said capstan rotation pulses, said supply reel rotation pulses, and said take-up reel rotation pulses, for detecting abnormality in the tape travel and for producing an abnormality detection signal which indicates that an abnormality has been detected in the tape travel,
said abnormality detecting means comprising a microcomputer for carrying out a processing operation which includes steps of counting the received capstan rotation detection pulses until a counted value of the capstan rotation pulses reaches a predetermined counted value, discriminating whether a supply reel rotation pulse was received during a period in which said capstan rotation pulses are counted until the predetermined counted value is reached, discriminating whether a take-up reel rotation pulse was received during a period in which said capstan rotation pulses are counted until the predetermined counted value is reached, discriminating whether a capstan rotation pulse was received within a predetermined time period, and generating said abnormality detection signal when any one of the three discriminated results is "NO".

4,553,183

MEMORY STORAGE APPARATUS HAVING IMPROVED HOUSING AND BASE PLATE ARRANGEMENT

Stanley F. Brown, Cupertino, and Garold W. Plonczak, Santa Clara, both of Calif., assignors to Atasi Corporation, San Jose, Calif.

Filed Jun. 28, 1982, Ser. No. 392,505
The portion of the term of this patent subsequent to Nov. 1, 2002, has been disclaimed.
Int. Cl.⁴ G11B *23/02, 17/26*
U.S. Cl. 360—98 **15 Claims**



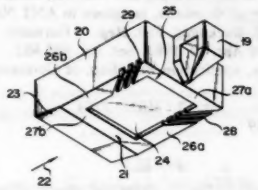
1. A rotating disc memory storage apparatus comprising:
an apparatus housing including a top cover, surrounding side walls and a bottom housing wall portion;
said bottom housing wall portion having a circular opening therein;
an electric motor including a stator and rotor;
a spindle shaft operatively connected to the motor;
a base plate within said housing and including an annular platform portion having hub means at its center for receiving said spindle shaft so that the spindle shaft may be rotated about an axis that is perpendicular to said platform portion;
means for mounting the base plate to the housing wall portion so that said hub means is concentrically disposed within said circular opening formed in the housing wall portion and the base plate and the housing wall portion are in firm air-tight sealing engagement;
means for operatively connecting the motor to the base plate and the spindle shaft to rotate the spindle shaft when the motor is energized;
at least one disc operatively mounted to the spindle shaft so that the disc rotates in a plane that is coaxial with and normal to the spindle shaft;
at least one transducer mounted on a carriage within said housing for accessing data recorded in the disc; and
actuator means mounted to the base plate at a position remote from the spindle shaft for moving said carriage and translating the transducer along the disc to selected track locations thereon.

4,553,184

MAGNETIC HEAD SLIDER

Kiichiro Ogishima, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 19, 1982, Ser. No. 399,264
Claims priority, application Japan, Jul. 31, 1981, 56-120134
Int. Cl.[4] G11B *5/60, 15/64, 17/32*
U.S. Cl. 360—103 8 Claims



1. A magnetic head slider for a rearwardly mounted magnetic head comprising:

a bottom surface which faces the surface of a magnetic disc, said bottom surface having a central area which is recessed and high pressure-applying areas surrounding said central area which are not recessed, thereby provided for an enclosed depression; and

pressure reducing grooves formed in opposed said high pressure-applying areas and extending diagonally from said central area and through said high pressure-applying areas, said grooves being inclined monotonically to the rear of said head slider;

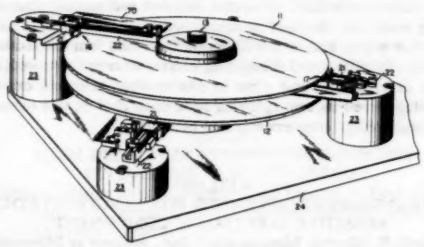
whereby compressed air streams caused by a rotation of a magnetic disc flow between said magnetic disc and said head slider bottom surface and along said high pressure-applying areas, said grooves acting to partially deflect said compressed air stream away from said slide by said pressure reducing grooves.

4,553,185

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING TELEVISION OR OTHER BROAD BAND SIGNALS WITH AN ALTERED TIME BASE EFFECT

Burnet M. Poole, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 18, 1968, Ser. No. 713,901
Int. Cl.[4] H04N *5/781*
U.S. Cl. 360—10.1 21 Claims



1. A method of magnetically recording broad band signals and reproducing the signals with an altered time base effect, said method comprising recording sequentially occurring, equal time periods of the broad band signals in sequence on at least two magnetic mediums with respective periods being recorded at a predetermined head-to-magnetic medium writing speed, the first occurring time period being recorded on one of said mediums and the next time period being recorded on the second of said mediums, reproducing the respective recorded periods with the same predetermined head-to-medium speed as during recording with at least certain of the periods being repeated a predetermined number of times, and forming a continuous output signal from the reproduced periods.

4,553,186

TAPE DRIVE MEMBER AND MANUFACTURING METHOD FOR THE SAME

Hiroshi Kawakami, Fujisawa, and Shigeyoshi Torii, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

PCT No. PCT/JP81/00378, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02110, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 14, 1981, Ser. No. 414,358
Claims priority, application Japan, Dec. 15, 1980, 55-176846
Int. Cl.[4] G11B *15/28, 15/60;* B65H *17/20*
U.S. Cl. 360—130.21 5 Claims

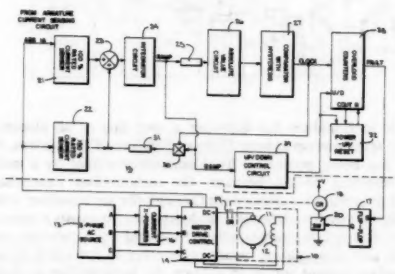
1. A tape drive member consisting essentially of an alloy of a soft metal material and a hard metal material, said member having an outer surface portion that is roughened by removing mainly said soft metal material to form projecting portions made of the hard metal material.

4,553,187

OVERCURRENT DETECTION DEVICE

James A. Burns, Menomonee Falls, and Dennis C. Nolan, Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 14, 1983, Ser. No. 532,066
Int. Cl.[4] H02H *3/087*
U.S. Cl. 361—96 6 Claims



1. An overcurrent detection device of the type having a first sensor circuit, a pulse generating circuit and a counter, wherein the sensor circuit is responsive to current feedback from an electrically powered device to produce an overcurrent signal when current exceeds a first current level, wherein the pulse generating circuit is responsive to the overcurrent signal to generate pulses at a rate that is responsive to the magnitude of the overcurrent, wherein the counter is responsive to the

pulses to generate a fault signal when enabled by the accumulated count, and wherein an improvement comprises:

a second sensor circuit coupled to the pulse generating circuit and responsive to current feedback from the electrically powered device to couple an overcurrent signal to the pulse generating circuit when current exceeds a second current level in excess of the first current level, wherein said overcurrent signal accelerates the pulse rate to the counter and the occurrence of the fault signal.

4,553,188

SECTIONALIZER

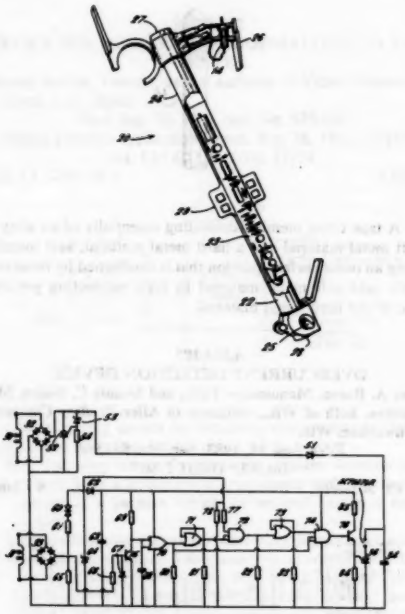
David R. Aubrey, Chester, and Stephen J. Kearley, Merseyside, both of England, assignors to The Electricity Council, England

Filed May 25, 1983, Ser. No. 497,938

Claims priority, application United Kingdom, May 28, 1982, 8215641

Int. Cl.⁴ H02H 3/07

U.S. Cl. 361—115 **9 Claims**



1. A sectionaliser for isolating a spur line of an electrical power transmission system from a main line of the system, the main line being protected from current overload by a multi-shot resetting circuit breaker, the sectionaliser comprising means providing a current path through the sectionaliser when closed, means for detecting at least two successive current surges through the sectionaliser followed by a current dead period, and an actuating means responsive to detection of said successive current surges to actuate the sectionaliser to break the current path through the sectionaliser during the subsequent current dead period, said means for detecting including a current transformer coupled to said current path means and a logic circuit connected to the current transformer for registering the current surges, the sectionaliser being formed as a sectionaliser module and a mount having physically spaced connection points between which the sectionaliser module is mounted to provide said current path and from which the sectionaliser module is expelled to break said path, the sectionaliser module comprising two end fittings co-operating with the spaced connection points of the mount and a hollow metal tube interconnecting the end fittings and providing said current path, said logic circuit being located within the metal tube.

4,553,189

SURGE PROTECTION DEVICE

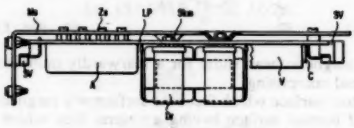
Erich Pivit, Allmersbach; Helmut Setzer, Untermünkheim; Raimund König, Neumarkt/Opf.; Peter Distelrath, Backnang; Peter Hasse, Neumarkt/Opf., and Manfred Zeidler, Pilsach, all of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,482

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214400

Int. Cl.⁴ H02H 9/04

U.S. Cl. 361—119 **12 Claims**



1. In an arrangement for protecting devices connected to transmission lines against excess or interfering voltages resulting from lightning strokes and the action of EMP or EMI, which arrangement includes first connecting means for establishing connections with such transmission lines, second connecting means for establishing connections with the devices, a ground conductor extending between the first and second connecting means, lightning protection chokes connected in series between the first and second connecting means to be interposed between the transmission lines and the devices, first excess voltage arresters connected to the connecting means for effecting coarse overvoltage protection for the devices, second excess voltage arresters connected to the connecting means for effecting fine overvoltage protection for the devices, and a network with frequency dependent behavior connected to the second connecting means and located between the second connecting means and the second excess voltage arresters, the improvement wherein: said arrangement further comprises a circuit board carrying said arresters, said chokes and said network; said ground conductor is constituted by a large-area metal plate oriented parallel to said circuit board; said first excess voltage arresters are constructed to carry lightning-induced current; said first and second excess voltage arresters, said chokes and said network cooperate for protecting the devices against EMI influences; said first and second connecting means are disposed at respectively opposite sides of said circuit board; and, in the direction from said first connecting means to said second connecting means, there are arranged, in the order recited and close to one another, said first excess voltage arresters, said lightning protection chokes, said second excess voltage arresters and said network.

4,553,190

TRANSPARENT CONTAINER FOR ELECTROSTATIC SENSITIVE ELECTRONIC COMPONENTS

Gerald E. Mueller, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Aug. 26, 1982, Ser. No. 411,348

Int. Cl.⁴ H05F 1/00

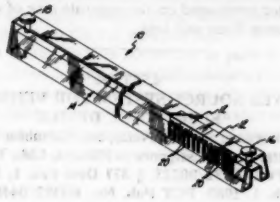
U.S. Cl. 361—212 **24 Claims**

1. A container adapted to receive a plurality of electrostatic sensitive electronic components, comprising:

a rigid, transparent, elongated channel being open on at least one end;

said channel having a transparent, insulative layer and a

transparent, conductive layer at least partially transversely surrounding said insulative layer whereby direct



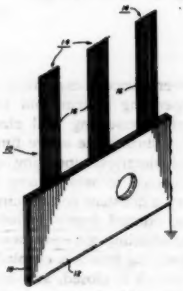
coupling of electric potential or electrostatic discharge to said electronic components is prevented.

4,553,191

STATIC ELIMINATOR

William S. Franks, Jr., Penfield; John M. Randall, Fairport, and Joseph A. Swift, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1982, Ser. No. 446,738
Int. Cl.⁴ H05F *3/00*
U.S. Cl. 361—212 **24 Claims**



1. A device for neutralizing static electrical charge on a surface comprising a support means, a plurality of resiliently flexible thin ohmic partially carbonized polyacrylonitrile fibers having an electrical resistivity of from about 2×10^3 ohm-cm to about 1×10^6 ohm-cm, said fibers being supported by said support means in such manner that said fibers are oriented and extend in a uniform direction in a brush like configuration from the support means so that the distal ends of the fibers may extend toward a said surface to afford reduction of any static electrical charge on said surface, and means for attaching said fibers to said support means.

4,553,192

HIGH DENSITY PLANAR INTERCONNECTED INTEGRATED CIRCUIT PACKAGE

Robert Babuka; John L. Piechota, and Leonard J. Poch, all of Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,190
Int. Cl.⁴ H05K *1/14*
U.S. Cl. 361—395 **6 Claims**

2. A module to planar board interconnection system for mitigating solder joint failure, comprising;

an integrated circuit module having circuit pads on one surface thereof;

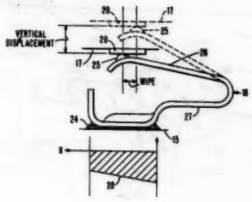
a printed circuit board having circuit pads on one surface thereof;

a housing for said integrated circuit module;

a board stiffener fastened to said printed circuit board;

means for pivotally connecting said module housing to said circuit board stiffener and loading the module and housing onto said circuit board; and

a plurality of spring contacts, each of said contacts having a U-shapelike configuration, said configuration having an



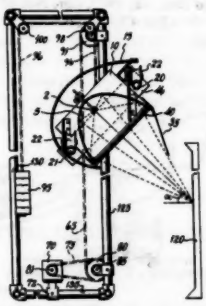
upper end portion adapted to make contact with a circuit pad of said integrated circuit module, and a bottom end portion surface bonded by a solder joint to a circuit pad of said printed circuit board, said spring contacts and said means coacting to place each aforesaid solder joint under compression when said module is loaded by said means, whereby solder joint failure is mitigated.

4,553,193

SCANNING LIGHT SYSTEM

Edwin C. Evans, Manhasset, N.Y., assignor to Gamma One Conversions, Inc., New York, N.Y.

Filed Feb. 1, 1983, Ser. No. 462,942
Int. Cl.⁴ G03B *15/02*; F21V *21/26*
U.S. Cl. 362—8 **12 Claims**



1. A scanning light system for successively illuminating the several areas of a painting or other planar target for the purpose of reproducing it, the system comprising:

a light source;

a reflector for directing and focusing light from the light source at an area of the target plane at an angle more than 40° and less than 80° to a perpendicular to the plane at said area; and

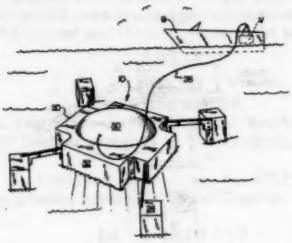
means for moving the light source and reflector as a unit in a plane parallel to that of the target and in directions alternately longitudinally and transversely thereof to cause the light to scan other portions of the target to be successively illuminated.

4,553,194

PORTABLE FLOATING FISHING LIGHT

Nathan M. Bailey, 215 W. 12th St., Winston-Salem, N.C. 27101

Filed Dec. 13, 1984, Ser. No. 681,204
Int. Cl.⁴ F21V *31/00*
U.S. Cl. 362—267 **4 Claims**



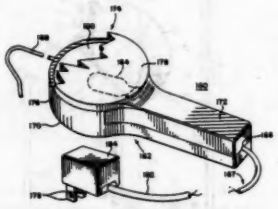
1. A floating illumination device comprising:
(a) a light source including means for releasably connecting said light source to a voltage source
(b) a housing means including means for mounting said light source therein;
(c) a plurality of arms pivotally attached to said housing at spaced positions therearound and movable between a folded compact position and an extended operable position;
(d) a buoyant block attached to the free end of each of said arms;
(e) whereby said arms and buoyant blocks serve to support said light on the surface of a body of water when in said extended position, yet can be folded into said compact position for ease of storage and convenience of transportation.

4,553,195

LAMP

Lorrain W. Prester, Box 38, Dorchester, Nebr. 68343

Filed Dec. 12, 1977, Ser. No. 859,304
Int. Cl.⁴ F21V *7/00*
U.S. Cl. 362—310 **7 Claims**



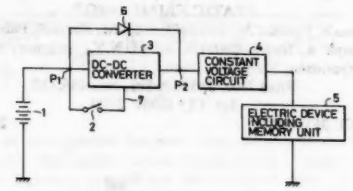
1. A lamp comprising:
an incandescent light bulb;
a plastic housing;
said incandescent light bulb being within said plastic housing;
said plastic housing having two relatively wide parallel walls and a narrower connecting edge;
conductors extending from said incandescent light bulb from said housing and being electrically connected to opposite ends of the filaments thereof within said housing;
said plastic housing having a clear portion capable of passing light;
said portion capable of passing light being shaped as a convex lens;
said housing including a handle portion;
said clear portion being formed as a lens integrally formed with at least a portion of said handle portion; and
a reflector positioned on the opposite side of said incandescent lamp from said lens.

4,553,196

POWER SOURCE SYSTEM FOR VEHICULAR ELECTRONIC DEVICE

Keiichi Tokuyama; Shotaro Naito, and Shizuhisa Watanabe, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP82/00223, § 371 Date Feb. 1, 1983, § 102(e) Date Feb. 1, 1983, PCT Pub. No. WO82/04487, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 9, 1982, Ser. No. 466,340
Claims priority, application Japan, Jun. 12, 1981, 56-89621
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—21 **8 Claims**



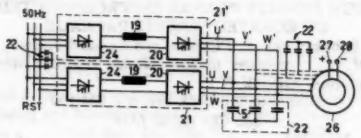
1. A vehicular power source system comprising: a battery; a vehicle electrical operating system; and a vehicle ignition switch for selectively connecting said electrical operating system to said battery during the entire time said vehicle is being operated; said electrical operating system including boosting means connected to said battery for boosting the voltage of said battery, a constant voltage circuit connected to said boosting means, control means including said vehicle ignition switch for controlling the operation of said boosting means so that said boosting means is enabled to operate only when said ignition switch is closed, and bypass means connected in parallel with said boosting means between said battery and said constant voltage circuit so that the voltage of said battery is applied through said bypass means to said constant voltage circuit when the battery holds its normal voltage level.

4,553,197

CONVERTER WITH FAST-ACTING OVERVOLTAGE PROTECTION

Herbert Stemmler, Kirchdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Oct. 24, 1983, Ser. No. 544,639
Claims priority, application Switzerland, Nov. 3, 1982, 6387/82; European Pat. Off., Oct. 6, 1983, 83109993.2
Int. Cl.⁴ H02M *5/45*
U.S. Cl. 363—37 **6 Claims**



1. A converter having fast-acting overvoltage protection, comprising:
plural bridge circuits each having a.c. voltage terminals and d.c. voltage terminals, wherein each a.c. voltage terminal of each bridge circuit is coupled with every other a.c.

voltage terminal of the plural bridge circuits by means at least one capacitor;

said plural bridge circuits each having an a.c. side and a d.c. side and said plural bridge circuits being phasewise parallel-connected on the a.c. side thereof;

said plural bridge circuits connected in pairs in which the d.c. sides of each pair are parallel-connected to each other by means of at least one intermediate circuit reactor; and

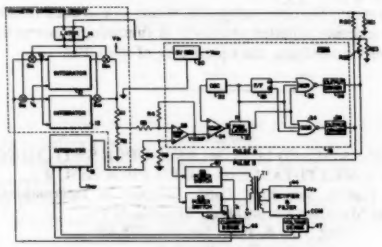
said plural bridge circuits, comprising bridge arms having GTO thyristors that can be switched off, being driven out of phase with respect to one another.

4,553,198

POWER CONVERTER SYMMETRY CORRECTION CIRCUIT

Edward Y. Chan, Lowell; Ross Henderson, and Anthony J. Vaudo, both of North Reading, all of Mass., assignors to Powercube Corporation, Billerica, Mass.

Filed Dec. 10, 1982, Ser. No. 448,622
Int. Cl.[4] H02P *13/22*
U.S. Cl. 363—56 **9 Claims**



1. For use in a power converter having a magnetic core transformer having a primary and a secondary winding, a pair of solid state power switches for push-pull drive of the transformer and an output circuit for providing an output voltage derived from the transformer, a circuit comprising:

output voltage sense means for producing an output voltage sense signal from the secondary winding;

a pulse width modulator coupled to the solid state power switches and operative to apply pulse width modulated pulses alternately to the power switches for push-pull drive of the transformer having pulse duration controlled according to said output voltage sense signal;

a symmetry correction circuit operative in response to the output currents of the power switches to provide a single error signal being time-multiplexed to include a representative sample of the magnitude of each current, further including:

first and second integrators each operative to provide a respective error voltage derived from and representing the output current of respective ones of the power switches; and

means for actuating each of the first and second integrators in alternating sequence to alternately receive said error signal and provide the integrator error voltages; and

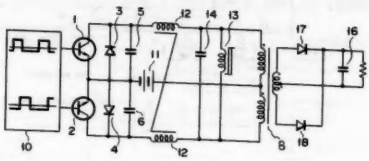
means for selectively applying the single error signal to the pulse width modulator to cause adjustment of the duration of the modulated pulses to compensate for the difference in characteristics between the power switches.

4,553,199

HIGH FREQUENCY POWER SUPPLY DEVICE

Koosuke Harada, Fukuoka, and Katsuaki Murata, Kumamoto, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 13, 1983, Ser. No. 541,653
Claims priority, application Japan, Apr. 13, 1983, 58-67179
Int. Cl.[4] H02P *13/24*
U.S. Cl. 363—75 **23 Claims**



1. A ferroresonant converter comprising:

signal generator means for generating first and second drive signals;

first switch means, having a first circuit path, for on/off switching said first circuit path in accordance with said first drive signal;

a first diode connected in parallel to said first circuit path;

second switch means, having a second circuit path, for on/off switching said second circuit path in accordance with said second drive signal, said second circuit path being connected in series to said first circuit path to form a first series circuit;

a second diode connected in parallel to said second circuit path;

inductor means, connected to said first series circuit and having a given inductance, for generating said AC output in accordance with the on/off switching of said first and second switch means; and

capacitor means having a given capacitance and being coupled with said inductor means, for forming a resonance circuit with said inductor means,

wherein said first and second drive signals are so controlled that one of said first and second circuit paths is switched-on after a period of dead time from when the other thereof is switched-off, said period of dead time being sufficient to allow the phase of said AC output to become inverted by said resonance circuit.

4,553,200

MODULAR OUTPUT DRIVER FOR VITAL PROCESSOR SYSTEMS

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 10, 1983, Ser. No. 550,431
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—200 **24 Claims**

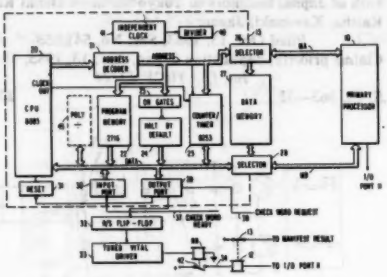
1. Processor apparatus, for producing a given signal with time sensitive parameters determined from data passed to said processor on a batch basis wherein said given signal may be produced by widely different data, comprising:

program means including a plurality of program segments, including first program segments which, when executed by said processor, produce segments of said given signal, and second program segments which, when executed by said processor produce a fixed portion of said signal;

means responsive to said data for calling corresponding program segments for execution;

whereby data, having predetermined characteristics, made

available to said processor on a batch basis, and at appropriate times, results in execution of a sequence of said



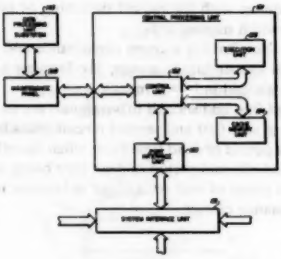
program segments so as to produce said given signal with said time sensitive parameters.

4,553,201

DECOUPLING APPARATUS FOR VERIFICATION OF A PROCESSOR INDEPENDENT FROM AN ASSOCIATED DATA PROCESSING SYSTEM

Frank S. Pollack, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 28, 1983, Ser. No. 479,790
Int. Cl.[4] G06F *11/22, 9/22*
U.S. Cl. 364—200 **4 Claims**



1. In a data processing system having a plurality of central processing units (CPUs), each CPU being operatively connected to other portions of the data processing system through a system interface unit, the other portions of said data processing system including at least one main memory unit, the CPU including a cache memory for storing information which includes instructions and data, an execution unit for manipulating data in accordance with the instruction currently being executed, and a control unit for controlling sequences of operation of said CPU, and further wherein each CPU includes an apparatus for verifying the operability of said CPU independent from the operation of said data processing system, said apparatus comprising:

(a) switch means, interposed between a first port of said CPU and said system interface unit, for decoupling said CPU from said system interface unit in response to a decoupling control signal thereby decoupling said CPU from the data processing system;

(b) detecting means, operatively connected to said switch means, for detecting whether the CPU and the system interface unit are operatively connected to generate a configuration signal indicating the status of the operative connection therebetween; and

(c) a maintenance panel operatively connected to said switch means and to said detecting means via a second CPU port, said maintenance panel including:

(i) means for activating said switch means;

(ii) means for sensing said configuration signal thereby recognizing the decoupling of the CPU from the system interface unit;

(iii) means for overriding the presence of a fault condition indicated by said configuration signal generated by the decoupling of said system interface unit from said CPU thereby permitting said CPU to continue its normal operation;

(iv) means for providing sequences of information to said control unit;

(v) means for controlling said control unit to permit said sequences of information to be stored in said cache memory;

(vi) means for causing said sequences of information in said cache memory to be executed by said CPU;

(vii) means for causing results of executing the sequences of information to be transferred to said maintenance panel; and

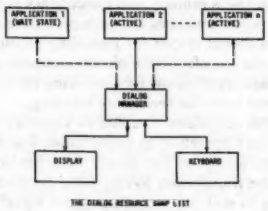
(viii) means for comparing said results to expected results to indicate whether the CPU is functioning correctly thereby verifying the operability of the CPU.

4,553,202

USER CONTROLLED DIALOG RESOURCE SWITCHING IN A MULTI-TASKING WORD PROCESSOR

Nicholas Trufyn, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1982, Ser. No. 375,432
Int. Cl.[4] G06F *9/46*
U.S. Cl. 364—200 **3 Claims**



THE DIALOG RESOURCE SWAP LIST

1. A method for the real time reassignment of input or output means coupling a multi-tasking processor in which switching from task to task is selectively invoked by interrupts including interrupts invoked through the input means, comprising the steps of:

building a linked list of identities of those tasks which call the input or output means and embedding pointers defining a dispatching order there among in counterpart task descriptions; and

responsive to an interrupt invoked through the input means, reassigning the input or output means from the task currently executing to the next task in order on the linked list;

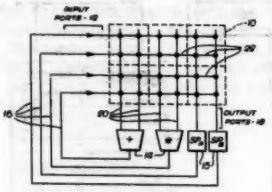
whereby assignment of the input or output means is rotatable among only those tasks in linked list order.

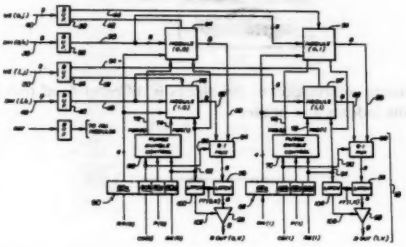
4,553,203

EASILY SCHEDULABLE HORIZONTAL COMPUTER

Bantwal R. Rau, Los Gatos; Christopher D. Glaeser, Fremont, and Philip J. Kuekes, Berkeley, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 28, 1982, Ser. No. 425,796
Int. Cl.[4] G06F *15/31, 13/02, 9/38*
U.S. Cl. 364—200 14 Claims





1. A parallel processing computer system for scheduling data transfers among concurrently operating data processing elements within the computer system, said computer system comprising:

a plurality of data processing elements operating concurrently and parallel each processing element having one or more inputs and one or more outputs; and

an interconnect circuit for transferring data from each processing element output to one or more processing element inputs after various time delays established by a predetermined schedule determined according to each specific data processing problem to be solved by said computer system wherein one or more of said processing element inputs may belong to the same processing element as said processing element output there being at least one processing element input to which the interconnect circuit transfers data at different times from at least two different processing element outputs, each combination of a processing element output and a processing element input between which the interconnect circuit transfers data being designated as a processing element output/input pair;

wherein the interconnect circuit comprises a plurality of cross-point modules, there being a separate module for each processor element output/input pair, so that each module is connected to one input of one processor element and one output of one processor element; and

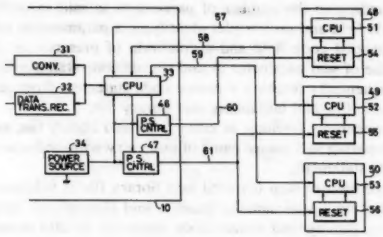
wherein each cross-point module comprises (i) a module input for receiving data from the processing element output connected to that module, (ii) a module output for outputting data to the processing element input connected to that module, and (iii) memory means, having a plurality of storage locations, for temporarily storing in said storage locations one or more data words successively received from the module input and for outputting through the module output a stored data word at one or more selected times when that data word is needed by said processing element input connected to said module, said selected times being established by said predetermined schedule.

4,553,204

CENTRAL PROCESSING UNIT RESTORING MECHANISM FOR A SYSTEM HAVING A PLURALITY OF CENTRAL PROCESSING UNITS

Takashi Hashimoto, Tokyo, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,201
Claims priority, application Japan, Jul. 9, 1981, 56-108006
Int. Cl.[4] G06F *11/00*
U.S. Cl. 364—200 4 Claims



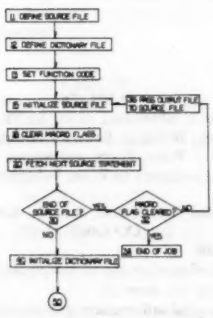
1. In a system comprising a plurality of central processing units wherein two-way data communication is effected between said central processing units; the improvement comprising a central processing unit restoring mechanism, comprising: at least one power source control section connected to and responsive to a first of said central processing units for controlling the application of power to a group of remaining ones of said central processing units, said group comprising at least one of said central processing units, a power supply unit connected directly to said first central processing unit and, via said power source control section, to said group of central processing units, and a group of reset sections, each said section connected to and associated with a respective one of said central processing units in said group, each said reset section being connected to and operated by said power source control section to reset a respective central processing unit, said group of reset sections comprising at least one reset section.

4,553,205

FLEXIBLE MACRO EXPANSION PROCESS

Salvatore Porchia, 1948 Zollinger Rd., Columbus, Ohio 43212

Filed Sep. 21, 1982, Ser. No. 420,730
Int. Cl.[4] G06F *9/00, 13/00*
U.S. Cl. 364—300 8 Claims



1. A process for transformation of source code from an

origin system of known characteristics for operation of a destination system of different known characteristics, with the aid of a digital computer, comprising the steps of:

(a) providing said computer with a source file containing said source code, comprising a plurality of sequential source code statements, some of which incorporate at least one macro name and parameter, and with an output file;

(b) providing said computer with a library file containing a plurality of sequential entries, each said entry comprising a macro name, a plurality of model statements, each said model statement comprising an expanded code field and a parametric triplet field, said expanded code field comprising expanded code which may incorporate parameters, and said triplet field comprising a number of triplets corresponding to the number of parameters in said expanded code field and each triplet identifying a parameter in said expanded code field and a condition of presence or absence of said parameter in said source code statements;

(c) sequentially fetching a source code statement from said source file, and initializing said library file;

(d) sequentially fetching an entry from said library file, and comparing said macro name of said entry with said source code statement;

(e) repetition of step (d) until said library file is exhausted and, if no macro name is found in said source code statement, passing said source code statement to said output file and reversion to step (c);

(f) sequentially fetching a model statement from said entry, if said macro name of said entry is found in said source code statement;

(g) sequentially fetching a triplet in said parametric triplet field of said model statement, and a parameter identified by said triplet in said expanded code field of said model statement;

(h) examining said source code statement for presence of said parameter;

(i) repetition of steps (g) and (h) until said triplets are exhausted and, if each said condition identified by each said triplet is not satisfied, then passing said expanded code field of said model statement to said output file;

(j) repetition of steps (f) through (i) until said model statements of said entry are exhausted; and

(k) repetition of steps (c) through (j) until said source code statements are exhausted.

4,553,206

IMAGE STORAGE AND RETRIEVAL

John M. Smutek, Billerica; Robert I. Wenig, Lowell, both of Mass.; Nancy J. Webb, Derry, and Amnon Waisman, Nashua, both of N.H., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 3, 1983, Ser. No. 538,682
Int. Cl.⁴ G06F *15/40*
U.S. Cl. 364—300 **29 Claims**

1. A method of storing digital information representing an image comprising the steps of:

storing said digital information in a plurality of blocks,

for each block creating an index containing information including the storage location for the block, and

creating an index header for the indexes containing information including image identity, wherein the structure of the

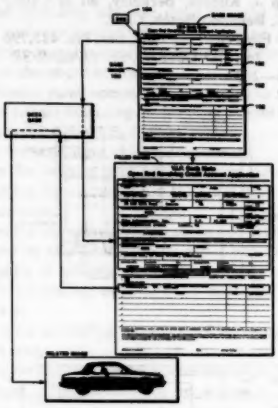


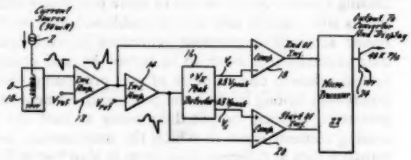
image information in the blocks is different from that of the indexes and header.

4,553,207

METHOD AND APPARATUS FOR DERIVING FUEL CONSUMPTION DATA FROM A HYDRAULICALLY DRIVEN FUEL INJECTOR

Marcello Veneziano, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 430,221
Int. Cl.⁴ G01M *15/00*; F02D *5/02*; F02M *51/06*
U.S. Cl. 364—431.01 **4 Claims**



1. A circuit for monitoring a hydraulically driven fuel injector valve comprising:

a sensor means on said injector valve for producing an electrical signal proportional to the velocity of valve movement each time said valve is driven into opened and closed positions;

means connected to said sensor means for detecting the peak valve of said electrical signal each time said valve is driven into its opened position and providing first and second threshold voltages having values proportional to said detected peak value; and

comparator means for comparing the next subsequent electrical signal against said first and second threshold voltages to provide a first output pulse during the time the compared electrical signal exceeds the first threshold voltage and a second output pulse during the time the compared electrical signal is below said second threshold voltage.

4,553,208

ENGINE CONTROL EVENT TIMING EMPLOYING BOTH CRANK ANGLE ROTATION AND TIME MEASUREMENTS

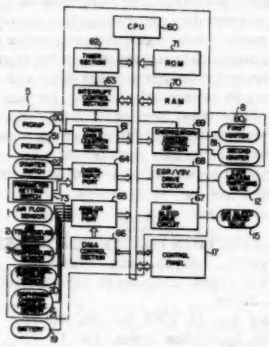
Susumu Akiyama, Kariya; Kenzo Ito, Okazaki; Hiroyasu Fukaya, Nagoya; Haruhiko Ogiso, Kariya; Yuji Hirabayashi, Aichi, and Takahide Kawamura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

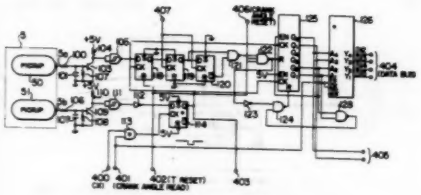
Division of Ser. No. 409,349, Aug. 18, 1982, Pat. No. 4,476,532, which is a division of Ser. No. 103,942, Dec. 14, 1979, Pat. No. 4,347,570. This application May 25, 1984, Ser. No. 614,138

Claims priority, application Japan, Dec. 18, 1978, 53-157782

Int. Cl.[4] F02P *5/08, 9/00;* **F02B** *5/02*

U.S. Cl. 364—431.05 **2 Claims**





1. A method of controlling an engine having a rotatable output shaft, a programmed computer and an electric device controlled by said programmed computer, said method comprising the steps of:

providing a position pulse at a predetermined angular position of said output shaft;

providing an angular pulse each time said output shaft rotates a predetermined angular amount between said position pulses;

counting by first counter means of said programmed computer the number of said angular pulses provided after said position pulse;

calculating by central processing means of said programmed computer a first angular position at which said electric device is to be controlled and a required time interval between said first angular position for controlling said electric device and a second angular position at which one of said angular pulses is to be provided just prior to said first angular position;

transferring said calculated required time interval from said central processing means to second counter means when said processing means detects that the number of said angular pulses counted by said first counter means indicates a third angular position at least one of said angular pulses before said second angular position;

generating clock pulses at a fixed frequency;

counting by said second counter means said clock pulses from the time when said central processing means detects that the number counted by said first counter means indicates said second angular position; and

controlling said electric device when said second counter means indicates that the counted number of said clock pulses reaches said required time interval.

4,553,209

AUTOMOBILE SPEED CONTROL SYSTEM

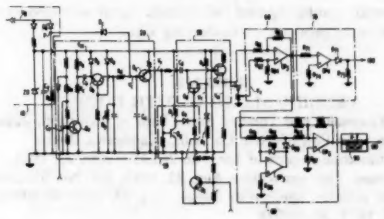
Hitoshi Hyodo, Okazaki; Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 21, 1982, Ser. No. 451,912

Claims priority, application Japan, Dec. 21, 1981, 56-206458; Dec. 21, 1981, 56-206459

Int. Cl.[4] B60K *31/00*

U.S. Cl. 364—431.07 **3 Claims**



1. An automobile speed control system for automatically controlling the speed of an automobile comprising means for generating a constant voltage, means for generating a pulsating signal corresponding to the actual automobile speed, frequency-voltage converting circuit means including an integrating capacitor for integrating said pulsating signal, said integrating capacitor connected between a base of an output transitor and ground, said base being set to a terminal voltage, circuit means providing a reference voltage, memory circuit means including a memory capacitor having one terminal connected to the output of said frequency-voltage converting circuit means and another terminal connected to the reference voltage means through a switching means, means for providing a comparative voltage, comparing means for comparing an output signal of said memory circuit means and said comparative voltage, means for controlling a throttle valve of an automobile in accordance with the output signal of said comparing means and a discharge means connected to said base of said output transistor for providing a path to ground for discharging said integrating capacitor when said terminal voltage is higher than said constant voltage;

whereby said memory circuit means of said automobile speed control system will not be affected by momentary voltage interruptions.

4,553,210

COMPLEMENTED ROLL ATTITUDE FLIGHT CONTROL SYSTEM

John P. Centala, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 17, 1982, Ser. No. 408,962

Int. Cl.[4] G06F *15/30*

U.S. Cl. 364—434 **11 Claims**

1. A system for producing an aircraft roll steering signal comprising:

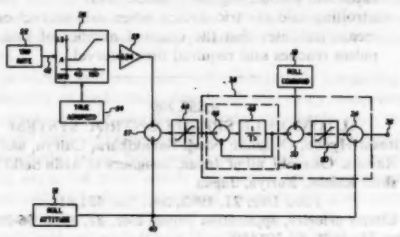
means for providing a signal representing aircraft roll attitude;

means for providing a signal representing a combination of aircraft yaw rate and aircraft airspeed;

means for modifying said roll attitude signal with said com-

bined yaw rate and airspeed signal to produce a modified roll attitude signal;

means for combining said modified roll attitude signal with



an aircraft roll command signal to produce a signal output; and

means for combining said roll attitude signal with said signal output to produce a roll steering signal.

4,553,211

VENDING MACHINE WITH DOORS

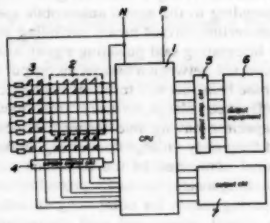
Kikuo Kawasaki, and Tomomi Sano, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 261,193, Apr. 22, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,500

Claims priority, application Japan, Aug. 29, 1979, 54-109017; Aug. 29, 1979, 54-109018

Int. Cl.⁴ G07F *7/08*; G06K *19/06*

U.S. Cl. 364—479 **5 Claims**



1. A vending machine with doors, comprising:

a storage member for accommodating a plural kinds of articles, with one or a plurality of articles of each kind of article being allotted at a predetermined portion therein;

an inner door attached to said storage member for allowing a supplement of said article while said inner door is opened and for allowing a delivery of said article while said inner door is closed;

an outer door provided outside of said inner door for prohibiting a delivery of said article while said outer door is closed;

means for sensing as sales information the respective numbers of said a plural kinds of articles accommodated in said storage member;

a first memory means for storing reference number data indicative of the number of articles to be accommodated in said storage member, sales number data indicative of the number of articles sold and remaining number data indicative of the number of articles left in said storage member after said outer door is closed, separately by each kind of article of said plural kinds of articles;

means for clearing said sales number data to initialize the respective ones of said reference number data and the respective ones of said remaining number data to the respective ones of said number of articles sensed by said sensing means;

sales counting means to be started after the operation of closing said outer door for modifying the respective ones of said remaining number data by the respective ones of said number of articles sensed by said sensing means, for subtracting the respective ones of modified remaining number data from the respective ones of the stored reference number data to calculate respective ones of said sales number data and for storing the respective ones of the calculated sales number data;

supplementary counting means to be started at least after the operation of closing said inner door for modifying the respective ones of said remaining number data by the respective ones of said number of articles sensed by said sensing means, for adding the respective ones of modified remaining number data to the respective ones of the stored reference number data to calculate respective ones of said reference number data and for storing the respective ones of the calculated reference number data; and

reading means to be started after the termination of the operation of said sales counting means for reading out said sales number data from said first memory means to transfer the sales number data read out to a second memory means provided outside of said vending machine.

4,553,212

LEAKAGE INSPECTION DEVICE FOR BRAKE HOSES

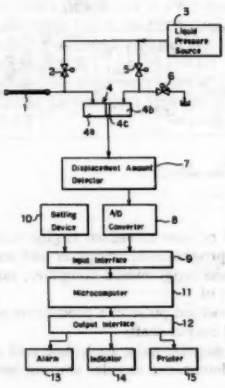
Chikahisa Hayashi, Anzyou, and Masakatsu Kanayama, Inazawa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 11, 1983, Ser. No. 483,754

Claims priority, application Japan, Apr. 14, 1982, 57-61977

Int. Cl.⁴ G01M *3/26*

U.S. Cl. 364—507 **4 Claims**



1. A leakage inspection device for brake hoses, comprising:

(a) a first cylinder chamber adapted to communicate with a brake hose to be inspected;

(b) a second cylinder chamber connected to a fluid pressure source;

(c) a leakage detecting cylinder with a piston disposed between said first and second cylinder chambers;

(d) displacement amount detecting means for detecting displacement of said piston of said leakage detecting cylinder and generating a signal corresponding to the displacement amount; and

(e) processing means for receiving the displacement detecting signal from said displacement amount detecting means, calculating leakage amount per unit time for a prescribed time based on the received signal, comparing

data of the leakage amount per unit time with an upper limit value based on leakage of good products, and generating a failed product signal when said leakage amount exceeds said upper limit value.

4,553,213
COMMUNICATION SYSTEM

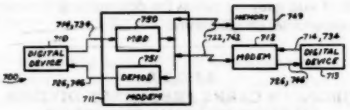
Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, and Ser. No. 849,733, Nov. 9, 1977, abandoned, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 849,812, Nov. 9, 1977, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 402,520, Oct. 1, 1973, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, Pat. No. 4,531,182, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 134,958, Apr. 19, 1971, and Ser. No. 101,881, Dec. 28, 1970.

This application Sep. 27, 1982, Ser. No. 425,134

Int. Cl.[4] G06F *3/04, 15/40*

U.S. Cl. 364—514 **26 Claims**



20. A communication system comprising:

overlapping signature signal communication means for communicating information as a plurality of overlapping signature signals, said communication means including,

(a) means for generating the information to be communicated,

(b) means for generating an overlapping signature signal in response to the information to be communicated, and

(c) means for communicating the overlapping signature signal to a remote location; and

filter means at the remote location for reconstructing the information to be communicated to the remote location in response to the overlapping signature signal.

4,553,214
ANGLE BASED STROKE GENERATOR

Jay R. Dettmer, Columbia, Md., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 1, 1982, Ser. No. 394,362

Int. Cl.[4] G06F *15/40, 15/20*

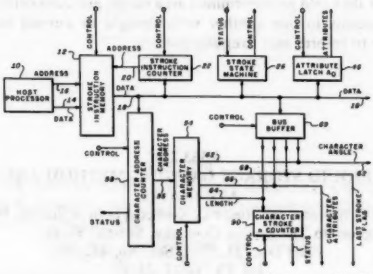
U.S. Cl. 364—521 **5 Claims**

1. Stroke display apparatus having display means with display face and writing means positonable along x and y display axes for writing vectors of predetermined length, origin, and slope, and for dynamically rotating said vectors by a predetermined offset angle supplied by a host computer, said stroke display apparatus comprising:

means for representing said vectors in terms of a vector angle with respect to a reference axis of said display face including first memory means for storing a plurality of vector angles, and first memory addressing means coupled to said first memory means for addressing said plurality of vector angles,

means for latching said predetermined offset angle provided by said host computer,

means for summing said vector angle and said latched offset angle, thereby providing a draw angle,



means responsive to said draw angle for providing first and second orthogonal signals representing incremental steps defining said vector rotated by said predetermined offset angle, and

means responsive to said first and second orthogonal signals for writing said vector rotated by said offset angle on said display face.

4,553,215
GRAVURE SCREEN AND METHOD OF MAKING THE SAME

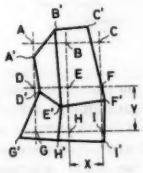
Toshiro Masuda, Tokyo, and Yoichi Tanaka, Hachioji, both of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Aug. 25, 1981, Ser. No. 296,179

Claims priority, application Japan, Jan. 22, 1981, 56-8212

Int. Cl.[4] G06F *15/20;* **G03F** *5/00*

U.S. Cl. 364—525 **3 Claims**



1. A method for preparing an irregular pattern of transparent or opaque lines for a gravure screen, said method comprising the steps of recording positional information concerning a plurality of points having regular positional relationships such as the points of intersection of a plurality of parallel straight vectors crossing at right angles or in an oblique manner so as to form a regular pattern; calculating, from the respective positions of said plurality of points, positions of new points which correspond to said plurality of points and which are irregularly located within a defined range; recording the positional information of said new points; determining combinations of said new points which correspond to combinations obtained by connecting said plurality of points to one another; connecting said new points to one another with straight or curved lines on the basis of said determined combinations in order to form said irregular pattern, said irregular pattern including a plurality of figures, each of which is surrounded by a number of said

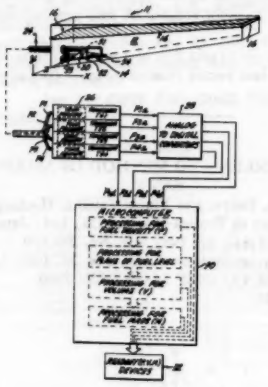
straight or curved lines; calculating the area of each of said figures; judging whether or not said area of each of said figures is within a predetermined area range; cancelling each combination of said new points which corresponds to at least one of said straight or curved lines surrounding a particular figure so as to combine said figure with another figure if said area of said figure is smaller than said predetermined area range; determining a further combination of said new points which corresponds to a straight or curved line which divides a particular figure into two smaller figures if said area of said figure is larger than said predetermined area range; and connecting said new points to one another with straight or curved lines in order to reform said irregular pattern.

4,553,216

LIQUID STORAGE GAUGING METHOD AND APPARATUS

Glenn G. Stevens, and Roger C. Kennedy, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1982, Ser. No. 452,966
Int. Cl.⁴ G01F *23/26*
U.S. Cl. 364—558 **14 Claims**



5. An apparatus for measuring density ρ of a liqud from a plurality of pressure measurements, comprising:

first, second, third and fourth pressure sensor means adapted to be disposed at known, spaced-apart locations beneath a surface plane of the liquid, wherein said locations are defined by position vectors $\vec{r_i}$ (i=1,2,3,4) and are disposed at different, unknown distances from said surface plane, said position vectors $\vec{r_i}$ (i=1,2,3,4) being related to a coordinate system and defined by associated coordinates x_i, y_i, z_i (i=1,2,3,4);

electrical means associated with said pressure sensor means for producing first, second, third and fourth electrical signals representing pressures P_1, P_2, P_3, and P_4 existing within the liquid respectively at said associated locations defined by position vectors $\vec{r_i}$ (i=1,2,3,4), said density ρ being a function of said first, second, third and fourth electrical signals representing pressures P_1, P_2, P_3, and P_4 and said coordinates x_i, y_i, z_i (i=1,2,3,4);

computing means for computing density ρ as a function of said first, second, third and fourth electrical signals and said coordinates x_i, y_i, z_i (i=1,2,3,4); and

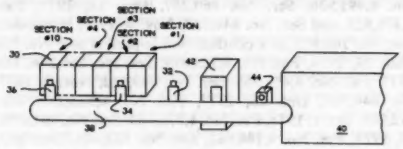
output means connected to said computing means for indicating the density ρ.

4,553,217

GLASSWARE GAUGING SYSTEM

Stephen W. Daudt, Longmont; George W. Gleason, Boulder; William C. Hermanson, Boulder, and Arthur A. Olsen, Boulder, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 281,467, Jul. 8, 1981, Pat. No. 4,476,533.
This application Jul. 11, 1984, Ser. No. 629,891
Int. Cl.⁴ G06F *15/20*; G01B *11/00*
U.S. Cl. 364—560 **21 Claims**



21. A system for measuring the roundness of an article of glassware in transit on a conveyor comprising:

a plurality of non-contact gauging means for measuring the diameter of the article of manufacture from a plurality of views, each of said gauging means including

means for sensing the transit time of a first edge of the article of glassware from a first predetermined position to a second predetermined position and for generating a velocity signal proportional thereto;

means for detecting the interval of time associated with the passage of the first edge of the article of glassware past a third predetermined position and the passage of a second edge of the piece of glassware past the third predetermined position and for generating a time interval signal proportional thereto; and

means for combining the velocity and time interval signals to generate diameter data proportional to the diameter of the article of glassware at each of said plurality of optical views; and

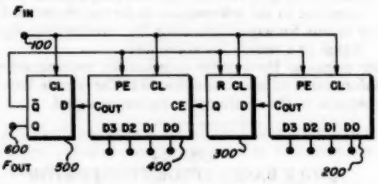
means for comparing the diameter measurements made by each of said gauging means for determining the roundness of said articles of glassware.

4,553,218

SYNCHRONOUS CARRY FREQUENCY DIVIDER AND METHOD OF USING THEREFOR

Thad J. Genrich, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1983, Ser. No. 470,687
Int. Cl.⁴ G06F *7/68*; H03K *21/16, 21/32*
U.S. Cl. 364—703 **16 Claims**



1. A frequency divider comprising:

means for applying a clock signal;

a series of counters, at least all but the initial counter in said series having a count enable input, each counter in said series having a terminal count output for providing a terminal count signal and each counter in said series being coupled to said means for applying;

means, coupled between the terminal count output of a first counter in each successive pair of counters and the count enable input of a second counter in each successive pair of

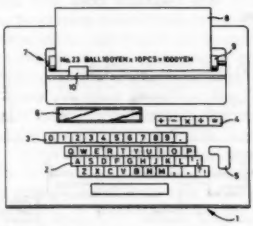
counters and coupled to said means for applying, for synchronizing application of a terminal count signal to a count enable input with said clock signal.

4,553,219

TYPEWRITER HAVING CALCULATING CAPABILITY

Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 28, 1982, Ser. No. 426,136
Claims priority, application Japan, Sep. 30, 1981, 56-145947
Int. Cl.[4] G06F 7/00
U.S. Cl. 364—705 8 Claims



1. A typewriter having a calculating function which comprises:

a keyboard having a plurality of character keys including letter keys, numeral keys and arithmetic symbol keys;

arithmetic means for performing an arithmetic operation designated by at least one of said arithmetic symbol keys, based on plural sets of numeric data each representing a numerical value and entered through said numeral keys said arithmetic means comprising a first and a second operand memory;

main control means, connected to said keyboard and said arithmetic means, for selecting said plural sets of numeric data as operands from among successive sets of data entered through corresponding to the sequential operation of said letter, numeral and arithmetic symbol keys, such that only the set of numeric data which is entered last prior to each operation of any one of said arithmetic symbol keys is regarded as one of said plural sets of numeric data, said main control means generating an arithmetic instruction signal corresponding to the operation of said arithmetic symbol keys, temporarily storing one set of numeric data in said first operand memory, updating said firt operand memory by replacing said one set of numeric data with another set of numeric data in a repeated manner until said arithmetic instruction signal is generated, and storing a subsequent set of numeric data in said second operand memory after generation of said arithmetic instruction signal, thereby making the selection of said plural sets of numeric data as said operands, said main control means directing said arithmetic means to perform the arithmetic operation based on the selected plural sets of numeric data, and reading out a result of said arithmetic operation from said arithmetic means; and

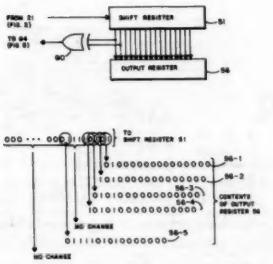
a printing device connected to said main control means for printing a succession of characters entered by said letter, numeral and arithmetic symbol keys, and said result of arithmetic operation read out by said main control means, said result being printed following said succession of characters.

4,553,220

MATRIX MULTIPLIER WITH NORMALIZED OUTPUT

William E. Swanson, San Diego, Calif., assignor to GTI Corporation, San Diego, Calif.

Filed May 19, 1983, Ser. No. 496,240
Int. Cl.[4] G06F 5/00
U.S. Cl. 364—715 16 Claims



1. Apparatus for normalizing a plurality of multiple bit data streams for minimizing the size of the data streams while substantially preserving the information content thereof, said apparatus comprising:

a plurality of first register means, each of said first register means receiving therein a respective multiple bit data stream one bit at a time,

detection means interconnected with each of said plurality of first register means and responsive to the signal levels of successive bits which form each of the respective data streams, and

a plurality of second register means, each of which being interconnected with a respective one of said plurality of first register means,

said detection means generating an output signal for causing the contents of said plurality of first register means to be concurrently loaded into respective ones of said plurality of second register means whenever said detection means detects particular signal levels for any successive bits which form any of said respective data streams in said plurality of first register means, the last data bits loaded into said plurality of second register means providing a normalized representation of each of said corresponding plurality of data streams.

4,553,221

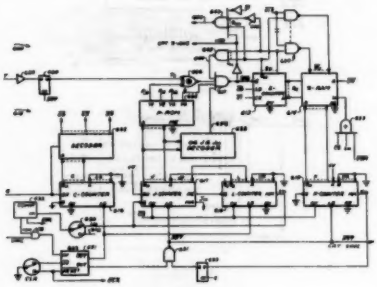
DIGITAL FILTERING SYSTEM

Gilbert P. Hyatt, P.O. Box 846, Cypress, Calif. 90630

Continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, and Ser. No. 849,733, Nov. 9, 1977, abandoned, said Ser. No. 160,872, is a continuation-in-part of Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, Ser. No. 849,812, Nov. 9, 1977, , Ser. No. 844,765, Oct. 25, 1977, , Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 402,520, Oct. 1, 1973, , Ser. No. 366,741, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 302,771, Nov. 1, 1972, , Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,943, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 230,872, Mar. 1, 1972, , Ser. No. 134,958, Apr. 19, 1971, , and Ser. No. 101,881, Dec. 28, 1970,. This application Sep. 27, 1982, Ser. No. 423,961

Int. Cl.[4] G06F *15/31*; G01V *1/28*

U.S. Cl. 364—724 42 Claims



8. A spacial filter system comprising:

spacial input means for generating single bit spacial input signal samples and

a spacial filter processor for generating filtered spacial output signal samples in response to the single bit spacial input signal samples generated with said spacial input means, wherein said spacial filter processor includes

reference means for generating spacial reference signal samples;

output means for storing spacial output signal samples; and

update means for updating the spacial output signal samples in response to the single bit spacial input signal samples generated with said spacial input means, said update means including

(a) product means for generating product signal samples by multiplying the single bit spacial input signal samples generated with said spacial input means and the reference signal samples generated with said reference means and

(b) summing means for adding the product signal samples generated with said product means and the spacial output signal samples stored with said output means.

22. A filter system comprising:

a plurality of spacial domain filter processors for generating filtered signal samples, wherein each of the spacial domain filter processors includes

(a) input means for generating input signal samples,

(b) reference means for generating reference signal samples, and

(c) multiplying means for generating product signal samples by multiplying the input signal samples generated with said input means by reference signal samples generated with said reference means;

summing means for generating filtered spacial signal samples by summing product signal samples generated with a plurality of said multiplying means from said plurality of spacial domain filter processors;

a memory for storing the filtered spacial signal samples generated with said summing means; and

output means for outputting the filtered spacial signal samples stored in said memory.

4,553,222

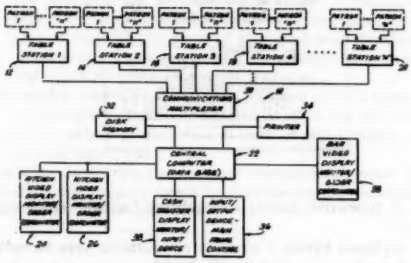
INTEGRATED INTERACTIVE RESTAURANT COMMUNICATION SYSTEM FOR FOOD AND ENTERTAINMENT PROCESSING

Lawrence G. Kurland, 26 Farmington La., Melville, N.Y. 11747, and Eli Gilbert, 545 West End Ave., New York, N.Y. 11024

Filed Mar. 14, 1983, Ser. No. 474,984

Int. Cl.[4] G06F *1/00*

U.S. Cl. 364—900 41 Claims



1. An interactive integrated restaurant information communication system for enabling both individualized food and entertainment interactive information communication with a central remote data base from each of a plurality of different multipurpose table station terminals utilizable by a plurality of different restaurant patrons, said system comprising a central computer means for remotely retrievably storing information comprising a plurality of food menu modules and entertainment modules for selective retrieval of said remotely stored information by each of said table station terminals over a common transmission media and for processing information received from each of said table station terminals; and a plurality of said table station terminals, each of said table station terminals comprising microcomputer means for controlling the operation thereof, said microcomputer means being connected to said common transmission media for receiving and transmitting information between said central computer means and said table station terminals, each of said table station terminals further comprising food and entertainment selection and control means connected to said microcomputer means for enabling retrievable selection of said remotely stored food and entertainment modules from said central computer means and interaction therewith at said table station terminal, a local storage means connected to said microcomputer means for locally storing said selected ones of said food and entertainment modules and a common local video type display means connected to said microcomputer means and said common transmission media for connecting each of said table station terminals to said central computer means for enabling communication of said respective information therebetween and for

commonly displaying data corresponding to said selected module; each of said remotely stored food and entertainment modules information comprising a different set of control instructions for said table station terminal, each of said sets of control instructions corresponding to a different selectable food menu or entertainment function respectively, for said terminal, said information transmittable from said central computer means over said common transmission media comprising said retrievably stored sets of control instructions for down-line loading of said local storage means at said table station terminal of a selected set of said control instructions in response to a request therefor by a restaurant patron via said selection means, said sets of control instructions for said table station terminal comprising sets of control instructions for said microcomputer means; each of table station terminals further comprising means connectable to said microcomputer means, to said selection means and to said local storage means for selectively controlling the local storage of said remotely transmitted information in said local storage means dependent on at least said selected interactive food or entertainment function for said terminal, said microcomputer means being operable in accordance with at least a first one of said locally stored remotely transmitted selected sets of control instructions and comprising means capable of processing incoming data provided via said selection and control means in accordance therewith, processed food menu selection data processed by said incoming data processing means being transmittable from said table station terminal to said central computer means over said common transmission media, said central computer means further comprising central display means for commonly displaying said processed food menu selection data from said plurality of table station terminals, said remotely stored entertainment modules comprising interactive activities, said microcomputer incoming data processing means comprising means capable of processing incoming interactive entertainment activity data provided from said selection and control means corresponding to a selected down-line loaded interactive entertainment activity for providing a displayable processed output therefrom on said common local video type display means; whereby each table station terminal may independently provide both interactive entertainment and food selection on a common video type display terminal in cooperation with a central data base.

4,553,223

STATIC DISTURBANCE SIGNAL RECORDING SYSTEM HAVING DETACHABLE PROGRAMMING TERMINAL & PROGRAMMABLE FIXED PART WITH SELECTIVELY POWERED BUFFER MEMORY

Francis Bouheller, and Claude Vialatte, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Jul. 6, 1982, Ser. No. 395,313

Claims priority, application France, Jul. 17, 1981, 81 13977

Int. Cl.⁴ G06F *3/00, 11/30, 15/16, 15/20*

U.S. Cl. 364—900 **10 Claims**

1. A disturbance signal recording system comprising: a fixed unit located at a point suitable for detecting a disturbance, said fixed unit including:

(a) processing signal means for continuously receiving input signals and outputting corresponding digital signals;

(b) pretriggering memory means for receiving and delaying said digital signals received from said processing signal means;

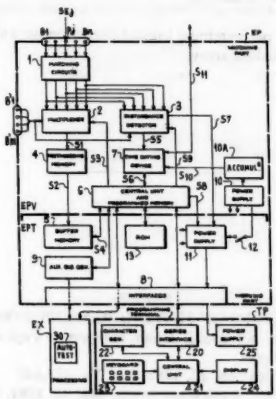
(c) disturbance detector means for receiving said digital signals from said processing signal means and detecting which ones of said digital signals are disturbance signals, said disturbance detector means outputting first and second control signals at the beginning of each detected disturbance signal and a third control signal at the end of each detected disturbance signal;

(d) solid state buffer memory means for recording, from said pretriggering memory, said ones of said digital signals which have been detected to be disturbance signals by said disturbance detection means, said recording occurring in response to a record control signal;

(e) programmable control means for receiving said first and third control signals from said disturbance detector means and in response to said first control signal issuing said record control signal to said buffer memory means and in response to said third control signal issuing a power cut-off signal;

(f) first power supply means for continuously supplying power to said processing signal means, said pretriggering memory means, said disturbance detector means and said programmable control means; and

(g) second power supply means for supplying power to said buffer memory means in response to said second control signal from said disturbance detector means and for cut-



ting off power to said buffer memory means in response to said power cut-off signal from said programmable control means;

a peripheral unit including a storage recording means for recording said disturbance signals recorded in said buffer memory means, and a detachable programming terminal, including a control display unit, for programming said programmable control means; and

digital interface means for linking said fixed unit and said peripheral unit;

wherein said programmable control means reads said disturbance signals recorded in said buffer memory means and transmits said read disturbance signals via said digital interface means to said peripheral unit for recording in said storage recording means.

4,553,224

MULTIPLEXED DATA HANDLER FOR PROGRAMMABLE CONTROLLER

Odo J. Struger, Chagrin Falls, Ohio, and Barry E. Sammons, Whitefish Bay, Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 4, 1983, Ser. No. 520,429

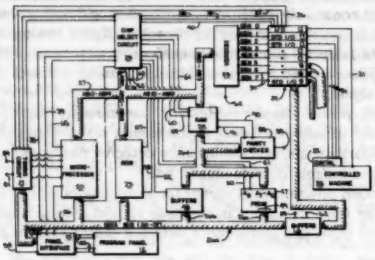
Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—900 **10 Claims**

1. A programmable controller which comprises: a memory for storing I/O data and a user control program; definition means responsive to a control instruction in the user control program for establishing an array of n rows by m columns in the memory for storing a block of I/O data associated with a designated I/O port;

I/O scan means for coupling I/O data between the established array and its designated port; and

control instruction execution means responsive to an operation code in control instructions in the user control pro-



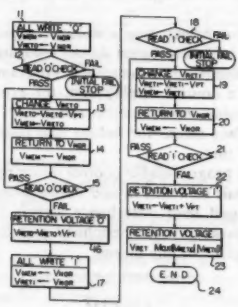
gram for performing a logical operation on a single bit in the established array.

4,553,225

METHOD OF TESTING IC MEMORIES

Yoshikazu Ohe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1982, Ser. No. 423,645
Claims priority, application Japan, Sep. 26, 1981, 56-151439
Int. Cl.[4] G11C *11/40, 29/00*
U.S. Cl. 365—201 **5 Claims**



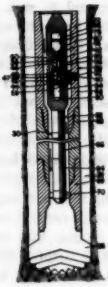
4. A method of testing a memory, comprising the steps of:
(a) writing data into memory cells of the memory at a normal operating voltage;
(b) lowering the operating voltage to a test voltage for a predetermined period of time;
(c) returning the operating voltage to normal;
(d) reading out the data and comparing it to the written data after the operating voltage is returned to normal;
(e) repeating steps (b)–(d) in cycles using successively lower values for the test voltage until the data written into the memory cells does not match the data read out; and
(f) designating, as a minimum memory cell data holding voltage limit, the test voltage value used in the cycle immediately before the data written into the memory cells does not match the data read out.

4,553,226

SYSTEMS, APPARATUS AND METHODS FOR MEASURING WHILE DRILLING

Serge A. Scherbatskoy, 3921 Clayton Rd. E., Fort Worth, Tex. 76116

Continuation of Ser. No. 110,848, Jan. 10, 1980, Pat. No. 4,351,037, which is a division of Ser. No. 857,677, Dec. 5, 1977, abandoned. This application Jun. 17, 1982, Ser. No. 389,247
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—83 **4 Claims**



3. A system for performing measurements in a drill hole during drilling operations using a drill string, said drill string defining a part of a fluid passage through which drilling fluid is forced to flow under pressure downwardly through said drill string from the earth's surface towards the lower end of said drill string and then upwardly through the annulus surrounding said drill string from said lower end of said drill string to the earth's surface, sensor means for sensing the magnitude of a downhole parameter and data signalling means for generating a series of signal pulses representing said magnitude, a restriction within said passage, said restriction causing a pressure drop within said passage and as a consequence thereof creating a high pressure zone and a low pressure zone within said passage on different sides of said restriction with a consequent pressure difference therebetween, pressure signalling means comprising a bypass valve in a bypass between said zones for providing fluid communication between said high pressure zone and said low pressure zone said bypass valve having an open position and a closed position;

means for producing a plurality of electrical voltage changes in response to each of said signal pulses and including

electronic means for controlling the time interval between selected ones of said electrical voltage changes;

means for controlling said pressure signalling means and operated in accordance with a selected one of said electrical voltage changes for causing initiation of the movement of said valve into one of said positions and in accordance with a selected other of said electrical voltage changes for causing initiation of the movement of said valve into the other of said positions, thereby causing pressure changes to be generated in said drilling fluid; and,

a transducer means at the earth's surface to detect said pressure changes and to provide a measure of the magnitude of said parameter.

4,553,227
OPTICAL PICKUP

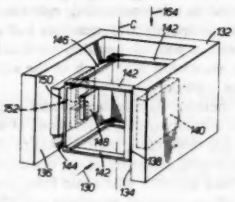
Fusayoshi Kido; Atsushi Takahashi, both of Yokohama; Shitta Shingu, Tokyo; Yoshinori Higuchi, and Akira Yamada, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 15, 1983, Ser. No. 485,459

Claims priority, application Japan, Apr. 23, 1982, 57-67190; Apr. 23, 1982, 57-67193

Int. Cl.⁴ G11B 7/08

U.S. Cl. 369—44 **16 Claims**



1. An optical pickup comprising:

a magnetic yoke having first and second surfaces facing each other, said first and second surfaces defining a magnetic gap therebetween;

at least one first flexible supporting member having first and second ends, said first end being fixed to said yoke at said first surface portion and said at least one first flexible supporting member being flexible in a first direction;

a first movable member attached to said second end of said at least one first flexible supporting member;

at least one second flexible supporting member having first and second ends, said first end of said second member being fixed to said first movable member, said second member being flexible in second direction perpendicular to said first direction;

a second movable member attached to said second end of said at least one second flexible supporting member;

an objective lens fixed to said second movable member and having an optical axis;

first permanent magnetic supporting means for producing a first magnetic field to support said first movable member in said magnetic gap;

second permanent magnetic supporting means for producing a second magnetic field to support said second movable member in said magnetic gap;

first electromagnet means for altering the distribution of said first magnetic field to move said objective lens in said first direction;

second electromagnet means for altering the distribution of said second magnetic field to move said objective lens in said second direction;

light source means for providing light to said objective lens;

a focusing lens for receiving light from said objective lens; and

a photo detector which receives light from said focusing lens.

4,553,228
MOBILE PRE-ETCHED DATA CARRIER AND AN OPTICAL TRACKING DEVICE USING SUCH A CARRIER

Jean L. Gerard, Claude Bricot and Pierre Berthet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 7, 1983, Ser. No. 472,995

Claims priority, application France, Mar. 12, 1982, 82 04218

Int. Cl.⁴ G11B 7/00

U.S. Cl. 369—46 **23 Claims**

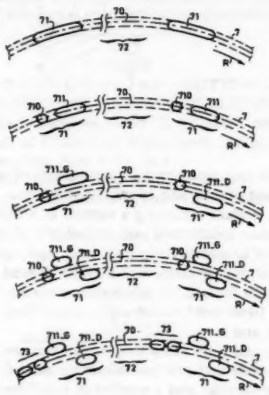
1. An optical memory system for recording data, in optically readable form, in the reference surface of a preformatted recording medium, said recording data being assigned to a trackable path having a circumferential axis extending along a plurality of evenly spaced convolutions about a center of said preformatted recording medium, said system comprising:

scan means illuminating said reference surface at the circular impact area of a focussed beam for lengthwise following of any one of said convolutions;

photodetector means arranged for sensing optical energy emerging from the illuminated portion of said reference surface; and

modulation means for controlling the intensity of said beam so that said recording data are storable in said reference surface in the form of a local change of optical characteristics induced by said beam;

said reference surface having preformatted flag means for embodying said trackable path, said preformatted flag means occupying a plurality of spaced sections in each of said convolutions thereby providing therebetween predetermined data storage sections specifically alloted to time shared recording of said recording data with said beam, said preformatted flag means comprising a serial pattern of optically readable island shaped items whose optical interaction with an illuminating spot projected by said scan means produces at the output of said photodetector means a recognition signal representative of the optical scanning of at least one of said items and at least one further signal sensing the radial offset of at least one of said items optically interacting with said spot;



identifying means for identifying said recognition signal to supply a timing signal controlling said modulation means for preserving the integrity of said preformatted flag means while scanned by said beam; and

tracking means responsive to said further signal, the one of said items optically interacting with said spot being arranged to produce effective optical interaction with said spot centered on said circumferential axis.

4,553,229
APPARATUS FOR READING INFORMATION

Shunichiro Wakamiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,315

Claims priority, application Japan, May 8, 1982, 57-75967

Int. Cl.⁴ G11B 7/00

U.S. Cl. 369—110 **8 Claims**

1. An apparatus for reading information from an optical recording medium, comprising:

a laser beam source for generating a laser beam;

a beam splitter; and

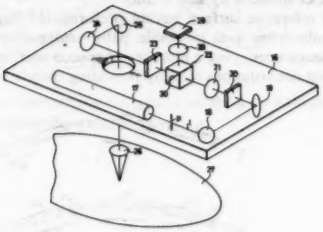
at least one fixed mirror disposed in an optical path of said

laser beam between said laser beam source and said beam splitter to reflect said laser beam toward said laser beam splitter;

means for receiving said laser from said beam splitter and directing said laser beam at an optical recording medium for generating a reflected laser beam for information carrying light;

means for receiving said information carrying light;

said laser beam source being arranged so that a linearly polarized, light oscillating plane including an optical axis and an oscillating direction of said leaser beam is perpendicular to a plane including a normal of said fixed mirror and said optical axis of said laser beam;



wherein a plane including a normal of a reflection plane of said beam splitter and said optical axis of said laser beam is parallel to said linearly polarized, light oscillating plane;

said fixed mirror comprises a multi-layered, dielectric film structure formed by alternately stacking high refractive index films and low refractive index films on a glass substrate; and

wherein said high refractive index films are made of zirconium oxide and said low refractive index films are made of silicon dioxide, and a number of said films is less than 14.

4,553,230

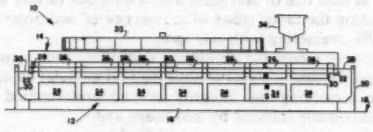
VIBRATION FREE TURNTABLE APPARATUS

Rollie W. Paulson, 6119 9th Ave. South, Gulfport, Fla. 33707

Filed Aug. 20, 1984, Ser. No. 642,548

Int. Cl.[4] G11B *1/00*

U.S. Cl. 369—263 **5 Claims**



1. An apparatus for supporting portable articles of the type desired to be protected from vibrations, comprising:

a substantially rectangular in configuration base member having a flat bottom;

a support means for supporting said base member in a substantially horizontal plane;

a plurality of upstanding post members disposed at preselected positions about the perimeter of said base member,

a substantially rectangular in configuration platform member having a flat bottom;

a plurality of depending post members disposed at preselected positions about the perimeter of said platform member;

a plurality of base magnet members fixedly secured to the top of said base member;

a plurality of platform magnet members fixedly secured to the bottom of said platform member;

said platform member being disposed upwardly of said base member;

said base magnet members and said platform magnet members having an opposite polarity and being disposed in vertically spaced relation to one another so that the repulsive forces therebetween maintain said base member and said platform member in spaced apart relation to one another;

alignment means for maintaining said base member and said platform member in said magnetically-established spaced relation to one another;

said alignment means comprising eight in number taut guy wires disposed in interconnecting relation to preselected ones of said upstanding post members and said depending post members, a pair of parallel, vertically spaced guy wires being associated with each of the sides of said base and platform members;

said platform member having length and width dimensions less than the corresponding dimensions of said base member so that the depending post members of the platform member are spaced inwardly of the upstanding post members of the base member when said base magnet members and said platform magnet members are aligned with respect to one another;

each of said guy wire members having a first end secured to an upstanding post member and a second end secured to a depending post member;

a first guy wire in a pair of wires having its first end secured to an upstanding post member and its second end secured to a depending post member;

a second guy wire in a pair of wires having its first end secured to a depending post member and its second end secured to an upstanding post member;

whereby an article sought to be supported and insulated from vibrations may be disposed atop said platform member and protected from vibrations by the inability of vibrations to traverse the gap between said platform magnet members and said base magnet members.

4,553,231

MOTION DAMPING SUSPENSION SYSTEM FOR RECORD PLAYBACK MACHINES

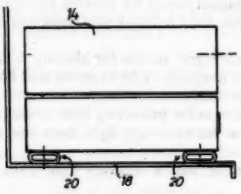
Stéphane A. M. d'Alayer de Costemore d'Arc, Ways, Belgium, assignor to Staar S. A., Belgium

Filed May 10, 1984, Ser. No. 608,879

Claims priority, application Belgium, Jun. 16, 1983, 211,016

Int. Cl.[4] G11B *1/00, 17/00, 23/00*

U.S. Cl. 369—263 **8 Claims**



1. A motion damping suspension system for mounting a machine, such as a record playback machine, vertically above a movable support comprising:

movable support members providing substantially flat, horizontal supporting surfaces;

machine mounting members providing substantially flat mounting surfaces substantially parallel to and above said supporting surfaces;

a plurality of elastic rings secured between said machine mounting surfaces and said support supporting surfaces with said elastic rings in flattened condition between said surfaces and the axis of each ring arranged substantially horizontally and opposite segments of each ring adjacent

said mounting and supporting surfaces extending substantially horizontally;

means for securing a portion of one of said horizontally extending segments of each ring to the machine and a portion of the other of said horizontally extending segments of each ring to the support to support the weight of the machine by compressing vertically extending segments of each ring such that stress applied to the machine having a component in the direction of the horizontal segments of a flattened ring produces limited rolling movement of said horizontally extending segments of the flattened ring along said mounting surfaces and said supporting surfaces which damps motion of the machine;

said flattened ring also damping motion of the machine vertically and laterally relative to said direction.

4,553,232

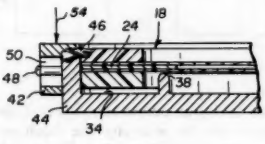
CLAMPING DEVICE FOR OPTICAL DISK ASSEMBLIES

Roger G. Covington, and Stephen H. Miller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,491

Int. Cl.⁴ G01D *15/32*; G11B *7/24*

U.S. Cl. 369—287 **2 Claims**



1. Optical disk write and/or read apparatus adapted for use with an optical disk assembly which includes (1) a flexible, disk-shaped support web carrying a record layer and (2) an annular retaining ring engaging the support around its peripheral region; said apparatus comprising:

(a) lens means for focusing light at a focal plane normal to a predetermined axis;

(b) an annular locating surface rotatable about said axis in a plane normal to said axis; and

(c) a clamping device for holding the annular retaining ring in a position bringing the support web into a predetermined abutting force against said locating surface

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4,553,233

MULTIPLE-RING COMMUNICATION SYSTEM

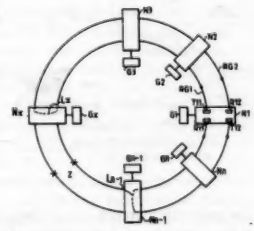
Pierre L. Debuysscher, Nazareth; Hugo J. P. Peeters, Brasschaat, and Christiaan G. M. M. Hennebel, Mortsel, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,133

Claims priority, application Belgium, Dec. 22, 1982, 2/59974

Int. Cl.⁴ H04J *1/16, 3/14*

U.S. Cl. 370—16 **18 Claims**



1. Multiple-ring communication system which includes a plurality of nodes intercoupled in at least two rings and operating on an equal basis without central control, each node including a plurality of message receiver/transmitter equipments associated to distinct ones of said rings respectively, each of said equipments able to receive messages on said associated distinct ring and transmit messages thereon in a direction opposite to other said distinct rings, and processing means for checking the receipt or absence of receipt of signals on the receiver ring portions connecting the receivers of said node to transmitters of its neighbouring nodes and for performing reconfiguration operations in response to the result provided by said checking operation, characterized in that said receiver/transmitter equipments of each said node (N1) are able to transmit on said rings (RG1, RG2) ring test messages (RTM11, RTM12) the destination of which is said node (N1) itself, said processing means (MP1, MEM1) controlling said receiver/-transmitter equipments of said node and being able to check the receipt or absence of receipt of said ring test messages prior to possibly executing said reconfiguration operations.

4,553,234

METHOD AND SYSTEM OF TRANSMITTING DIGITAL INFORMATION IN A TRANSMISSION RING

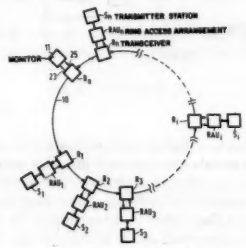
Johan R. Brandsma; Alphons A. M. L. Bruekers, and Jozef L. W. Kessels, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 30, 1983, Ser. No. 566,945

Claims priority, application Netherlands, Jan. 6, 1983, 8300033

Int. Cl.⁴ H04J *3/00*

U.S. Cl. 370—86 **22 Claims**



1. A method of transmitting digital information between a plurality of stations which are coupled to a unidirectional transmission ring having a monitor for generating a frame in the ring said frame comprising a plurality of types of time slots which differ from each other in the number of bits which can be accommodated in the time slots, time slots of the same type forming in consecutive frames a corresponding number of numbered channels for transmitting the digital information between stations, said frame comprising at least one time slot for transmitting the channel numbers to be utilized from the monitor to the stations, and the relevant corresponding time slots in consecutive frames form together a monitor transmit channel, at least one time slot per frame is provided for transmitting channel numbers which are no longer utilized from the stations to the monitor, and corresponding time slots in consecutive frames form together a monitor receive channel, at least one time slot constituting a message field, is provided for transmitting protocol messages from one station to another addressed station, the method comprising the following steps:

(a) obtaining a channel to be utilized by reading at a station a channel number from the time slot of the monitor transmit channel and entering therein a dummy channel number ("nihil");

(b) repeating step (a) until the read channel number is a "non-nihil" channel number;

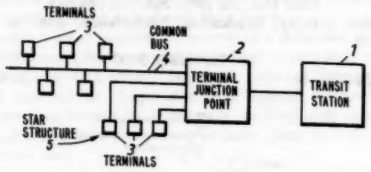
(c) transmitting from said station the obtained channel number to be utilized to an addressed station;
(d) repeatedly writing at said station a sub-packet of digital information in the transmission ring into a time slot of the channel obtained;
(e) repeatedly reading at said addressed station the sub-packet of information in a time slot of the given channel in the ring;
(f) writing the channel number which is no longer required after the transmission of the digital information, into a time slot of the monitor receive channel after reading the channel number present there; and
(g) repeating step (f) with the read information until the read channel number is a "nihil" channel number.

4,553,235

APPARATUS FOR CONNECTING DIGITAL TERMINALS TO A DIGITAL EXCHANGE

Lars T. E. Svensson, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00167, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/04115, PCT Pub. Date Nov. 24, 1983
PCT Filed Apr. 27, 1983, Ser. No. 574,101
Claims priority, application Sweden, May 7, 1982, 8202896
Int. Cl.⁴ H04J *6/00*
U.S. Cl. 370—94 **5 Claims**



1. Apparatus in a digital communication system for connecting digital terminals to a terminal junction point which in turn is connected to a digital exchange, characterized in that the terminal junction point includes a directing means (9) sending in a first state a flag signal to all terminals (3) as well as to the exchange (1) where said signal is utilized, for filling out empty space in the information flow, and in its second state sending an information packet received from a terminal toward the exchange as well as to do all terminals; the terminals including means (27, 28) for sending out an information packet, in response to the flag signal having been received a given number of times, the reception of said information packet at the junction point resetting said directing means to its second state; the terminal including comparison means (34) for determining whether the packet information sent back from the junction point corresponds to the terminal's own sent-out packet information, and means responsive to said comparison means for disconnecting the terminal if the sent back packet information is different from the sent-out packet information.

4,553,236

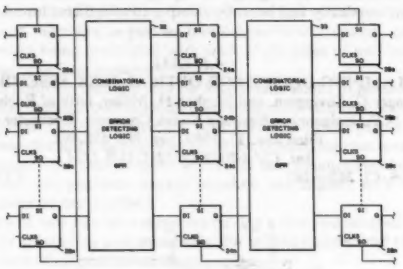
SYSTEM FOR DETECTING AND CORRECTING ERRORS IN A CMOS COMPUTER SYSTEM

John J. Zasio, Sunnyvale, and Larry Cooke, Cupertino, both of Calif., assignors to Storage Technology Partners, Louisville, Colo.

Division of Ser. No. 460,952, Jan. 25, 1983, Pat. No. 4,495,629. This application Jul. 5, 1984, Ser. No. 592,125
Int. Cl.⁴ G06F *11/26*
U.S. Cl. 371—15 **4 Claims**

1. An improved system for detecting and correcting errors in a computer system comprising a plurality of scannable latch circuits connected in series as a shift register circuit and each having its output coupled to combinatorial logic circuitry and error detecting circuitry, said scannable latch circuits being operable as a latch under control of at least one clock signal that defines a clock cycle, the improvement comprising:

means for isolating the latch output of each scannable latch circuit that is connected to the combinatorial logic and error detecting circuitry from the shift register output of each scannable latch circuit that is connected to the next stage of the series shift register circuit, comprising latch means coupled to the latch output of said scannable latch circuit for allowing a data signal appearing on the latch output to be selectively clocked into said latch means, said



latch means having an output terminal that operates as the shift register output, whereby the latch output is not loaded down by the shift register output; and

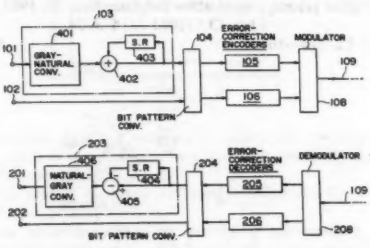
means for allowing the latch output to be monitored during substantially all of said clock cycle, comprising an asymetrical clock signal, having first and second states, supplied as said clock signal of said scannable latch circuits, said asymetrical clock signal assuming the first state for a substantially longer time period during each clock cycle than it assumes the second state, whereby errors may be detected by the error detecting circuitry for a longer time, without having to slow down said clock cycle, by detecting errors during said first state.

4,553,237

ERROR-CORRECTION SYSTEM FOR TWO-DIMENSIONAL MULTILEVEL SIGNALS

Katsuhiro Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 532,935
Claims priority, application Japan, Sep. 17, 1982, 57-161876
Int. Cl.⁴ G06F *11/10;* **H04L** *5/12*
U.S. Cl. 371—37 **9 Claims**



1. A method for correcting errors comprising, differentially encoding part of the data bits of first multilevel input data to form second data comprising the differentially encoded data bits and the remainder data bits, converting the bit patterns of

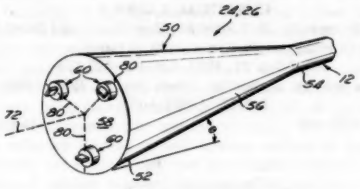
the second data into third data in two-dimensional multilevel signal space according to a predetermined transfer function, deriving a transparent error-correcting code from each of the different phases of the third data and appending the error-correcting code to each different phase to thereby form fourth data, modulating said fourth data in two-dimensional multilevel signal space for transmission to a destination, demodulating the modulated fourth data, separating the appended error-correcting code from each different phase of the demodulated fourth data, correcting an error which might exist in the different phase of the fourth data with the separated error-correcting code, reconverting the bit pattern of the error-corrected data to recover the original second data and differentially decoding part of the data bits of the second data to recover the original first data.

4,553,238

FIBER OPTIC AMPLIFIER

Herbert J. Shaw, Stanford; Michel J. F. Digonnet, and Robert A. Lacy, both of Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Filed Sep. 30, 1983, Ser. No. 537,493
Int. Cl.⁴ H01S *3/30*
U.S. Cl. 372—6 **13 Claims**



1. An improved fiber optic amplifier, comprising an optical laser fiber, formed of a laser material, the improvement comprising an apparatus for providing light to pump said optical laser fiber, comprising:

a cone shaped rod, comprising:

a first fiber sized end for

coupling light to said laser fiber:

a second end having a diameter substantially larger than said first end and having an end face for receiving light; and

means for preferentially introducing pump light into said end face of said second end at a location which is offset from the central axis of said cone shaped rod to non-uniformly illuminate said end face to preferentially excite high order modes in said cone shaped rod, said cone shaped rod focusing said pump light from said second end to said first fiber sized end for introduction to said laser fiber to pump said laser material and cause an electronic population inversion in said laser material.

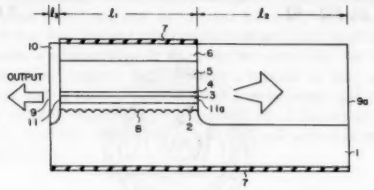
4,553,239

DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER

Shigeyuki Akiba, Tokyo; Katsuyuki Utaka, Musashino; Kazuo Sakai, Tokyo, and Yuichi Matsushima, Tokorozwa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,889
Claims priority, application Japan, Feb. 16, 1982, 57-22123
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—50 **4 Claims**

1. In a distributed feedback semiconductor laser comprising a substrate, a distributed light region, having a light emitting layer, an adjoining layer and corrugations causing refractive index variations in the travelling direction of light, and electrodes on the distributed light region for injection of a current into the light emitting layer thereby causing laser oscillation, the improvement characterized in that a semiconductor region having an energy gap larger than an energy gap of said light emitting layer is defined as at least one layer of an end extension of the distributed light region, said substrate having in the semiconductor region a thickness less than that in the distributed light region, and the semiconductor region being uniformly and substantially thicker than a width dimension of said distributed light region and effective to widespread therein light received from the distributed light region and to maintain from feeding back of the light to the distributed light region.

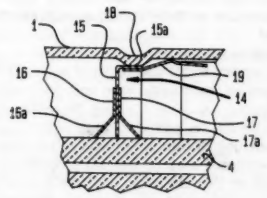


4,553,240

GAS LASER WITH A SPRING-SUPPORTED CAPILLARY

Rudolf Schmid, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,079
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329872
Int. Cl.⁴ H01S *3/03*
U.S. Cl. 372—61 **11 Claims**



1. In an improved gas laser of the type having

a gas-filled casing which contains an elongated glass jacket,

a capillary enclosed by the jacket, one end of the capillary being permanently connected to the jacket while another end is supported by a supporting spring,

the improvement comprising:

a perforated disc forming part of the spring, the disc extending perpendicular to the axis of the capillary, contacting an annular constricted zone of the jacket, and being made of a material which satifies a formula

$$\left|\frac{\alpha_2 - \alpha_1}{\alpha_1}\right| \leqq .1$$

where α_1 equals a coefficient of thermal expansion of the jacket and α_2 equals a coefficient of thermal expansion of the disc; and

an annular constricted zone in the jacket, said zone forming a shrink mount for the disc.

4,553,241

LASER TUBE STRUCTURE

Edwin G. Chaffee, Salt Lake City, Utah, assignor to Laser Corporation, Salt Lake City, Utah

Filed Jul. 18, 1983, Ser. No. 514,701
Int. Cl.[4] H01S *3/03*
U.S. Cl. 372—62 **9 Claims**

1. A gas laser tube, comprising:

(a) a plurality of axially-aligned, elongated, thin wall, cylindrical segments of electrically-insulating material successively disposed between electrodes at anode and cathode ends in hermetically-bonded relationship with one another and forming an outer wall of the laser tube, each said cylindrical segment defining within the wall thereof an axial longitudinal cylindrical cavity aligned with the said axial longitudinal cavity of each other said cylindrical segment, each said cylindrical segment further defining through the wall thereof a plurality of off-axis longitudinal circular holes therethrough in gas communicating relationship and aligned with the said off-axis longitudinal holes of each other said cylindrical segments to establish a corresponding plurality of elongated cylindrical gas return paths;

(b) a thin metallic support member within each said cavity of each said segment, said support member having an outer peripheral portion located between the sides of said segment and bonded to the wall surface of said segment surrounding said cavity and integral with said peripheral portion a disc portion having an axial aperture therein and aligned with the said axial aperture of each other said cylindrical segments;

(c) a refractory metal disc secured to one side of each said disc portion concentric with and over said axial aperture and having an axial opening therethrough defining an axial bore for the laser discharge and aligned with the said axial opening of each other said refractory metal disc, the cross sectional area of said axial openings being circular and greater than the cross sectional area of said holes; and

(d) metallic securing means disposed between and bonded to the facing end surfaces of adjacent ones of said cylindrical segments in a manner precluding establishment of an electrical path between either electrode associated with said laser and any cooling medium flowing external of the tube while allowing gas communication between said holes at each interfacing pair of segments and in a further manner of hermetically sealing said gas in said holes from said discharge.

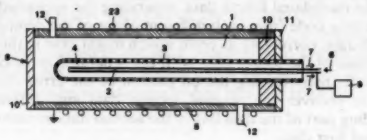
4,553,242

GAS LASER

Hans Opower, Krailling, and Volker Ernst, Neu-Esting, both of Fed. Rep. of Germany, assignors to W.C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,121
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316778; Nov. 2, 1983, 3339574
Int. Cl.[4] H01S *3/097*
U.S. Cl. 372—87 **18 Claims**

1. An electrically excited gas laser having an optical resonator, the laser comprising an inside conductor in the form of a metal tube connected to a high-frequency voltage source, the inside conductor being surrounded, with a first intervening space, by a symmetrical outside conductor that is at ground potential, the first intervening space between the inside and outside conductors forming an excitation chamber in which an electrical discharge takes place between the inside and outside conductors, wherein the outside conductor consists of a tube of



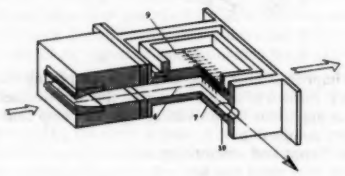
electrical conductive material and is coaxially disposed with the inside conductor which in turn is surrounded, by a spaced jacket tube to form a second intervening space, and a dielectric cooling liquid of electrical insulating quality and low loss factor for high-frequency fields flowing through the second intervening space for continuous or modulated continuous beam operation of the laser.

4,553,243

CHEMICAL LASER

Salman Rosenwaks, 20/3 Sinai St., Beer-Sheva, and David Chuchem, 11 Hakerem St., Omer, both of Israel

Filed Sep. 21, 1982, Ser. No. 420,624
Claims priority, application Israel, Jan. 28, 1982, 64884
Int. Cl.[4] H01S *3/095*
U.S. Cl. 372—89 **16 Claims**



1. A chemical laser operating in a quasi-continuous manner comprising a subsonic stagnation premixing chamber having an inlet and an outlet, means for continuously introducing reactants through the inlet into said chamber forming a gaseous mixture on the fly in said chamber, a supersonic nozzle located at the outlet from said chamber, said nozzle having an outlet, a laser cavity located at the outlet from said nozzle receiving the mixture of gaseous chemical reactant at a velocity exceeding the combustion velocity of said mixture, means for applying a pulsed electrical discharge to said reactants in said laser cavity, and means for exhausting the spent cases from said laser cavity to the atmosphere.

4,553,244

LASER BEAM ENERGY PROFILE SYNTHESIZER

George J. Benedict; Edward D. Reed, Jr., both of Sunnyvale, and Robert W. Jones, San Jose, all of Calif., assignors to GTE Communications Products Corporation, Stamford, Conn.

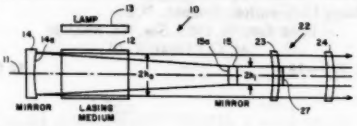
Filed Apr. 25, 1984, Ser. No. 603,809
Int. Cl.[4] H01S *3/08*
U.S. Cl. 372—95 **5 Claims**

1. In a laser system having an optical axis, a lasing medium, means to energize said medium to produce along said axis a laser beam having a predetermined diameter, and first and second mirrors spaced from opposite ends of said medium along said axis, said first mirror having a concave surface facing said medium and having a diameter no less than the diameter of said beam, said second mirror having a convex

surface facing said medium and having a diameter less than that of said beam whereby said first and second mirrors define an unstable laser resonator, the portion of said laser beam propagating beyond said second mirror constituting the output beam from said resonator and having an annular cross-sectional shape with an outer portion and a central portion, said beam having substantially less energy in said central portion than in said outer portion, the improvement of beam energy profile synthesizer means comprising:

third and fourth mirrors traversing and being spaced along said axis, said third mirror being proximate to said second mirror, said fourth mirror having a concave surface opposite said third mirror and being partially optically transmitting and intersecting said output beam whereby to reflect part of said output beam toward said third mirror and to transmit the balance of said output beam; and

said third mirror having a totally reflective convex surface opposite said fourth mirror and having a diameter substantially the same as the diameter of said central portion of said beam, the radii of curvature of the convex and concave surfaces of said third and fourth mirrors, respectively, being predetermined whereby part of the output beam is transmitted by said fourth mirror and the balance is reflected thereby to said convex surface of the third mirror and is again reflected by a highly reflective disc-shaped coating disposed on said convex surface toward said fourth mirror in said central portion of the beam.

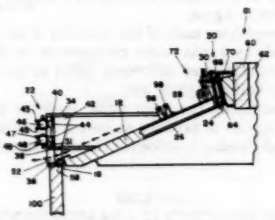


4,553,245

ROOF ASSEMBLY FOR AN ELECTRIC ARC FURNACE

Robert L. Kerr, Poland, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Jun. 24, 1983, Ser. No. 507,416
Int. Cl.⁴ F27D *1/12*
U.S. Cl. 373—74 **15 Claims**



1. A roof assembly for an electric arc furnace having a centrally located electrode area, comprising:

a first support ring means defining the outer periphery of said roof assembly,

a second support ring means located concentrically and inwardly of said first ring means and defining the outer periphery of said electrode area, and

a plurality of trapezoidal-shaped panel units assembled between said first and said second ring means in a circular fashion which forms a frustonically cross-sectional shaped main roof section,

and first support ring means includes means providing a line contact with said panel units,

said second support ring means includes means providing contact between said second support ring means and said panel units,

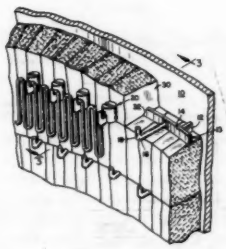
each said panel unit has arcuate bases with one shorter than the other and longitudinal sides, and are arranged in a manner that along the length of said sides a non-contacting relationship exists relative to an immediate arranged adjacent panel unit, and said arcuate bases are constructed such that said line and other contact of said each panel unit enables a compressive fit to occur between said first and said second support ring means in a manner so that each panel unit is totally supported by and between said first and second support ring means with all of the weight of each panel unit transferred to said first and second support ring means.

4,553,246

CONSTRUCTION METHOD AND APPARATUS FOR INSTALLING A HANGER-SUPPORTED HEATING ELEMENT IN AN ELECTRICAL RESISTANCE FURNACE

C. T. Christie, P.O. Box 54, Scio, Oreg. 97374

Filed Oct. 17, 1983, Ser. No. 542,734
Int. Cl.⁴ H05B *3/66*
U.S. Cl. 373—130 **14 Claims**



2. Apparatus for installing insulation in an electric furnace having a heating element comprising:

(a) a support ring affixed to a wall of said furnace and spaced inwardly of said wall said support ring having a plurality of rods mounted thereon at a vertical distance below the top of said ring thereby forming a vertical ridge;

(b) heat insulating material being placed adjacent said wall and on top of said ring, said material having a groove in at least one surface thereof mating with said ridge and said material forming at least a vertical slice of an inner wall of said furnace when placed contiguously about the periphery of said wall; and

(c) electrically insulative means mounted to said rods supporting said heating element.

4,553,247

TELEMETRY SYSTEM WITH SIGNAL BOOSTER FOR DIGITAL DATA TRANSMISSION THROUGH A TRANSMISSION LINE

Robert W. Harris, Crofton, Md., assignor to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 323,599, Nov. 20, 1981, Pat. No. 4,468,785, which is a continuation-in-part of Ser. No. 272,125, Jun. 10, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,698
Int. Cl.⁴ H04J *3/08*
U.S. Cl. 375—4 **19 Claims**

1. A telemetry system, comprising:

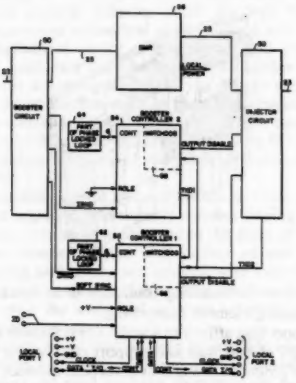
an electronic transmission line having a first end;

clock means, operatively connected to said electronic transmission line, for generating a sync signal for transmission on said electronic transmission line;

N receiving means for receiving digital data, where N is an integer greater than or equal to 2;

N booster subsystems coupled to said electronic transmission line between said clock means and the first end of said electronic transmission line, the first booster subsystem being coupled to said electronic transmission line at a position between said clock means and the Nth booster subsystem, the Kth booster subsystem being coupled to said electronic transmission line at a position between said clock means and the (K+1)th booster subsystem (where K is an integer and $1 \leqq K < N$), the Kth booster subsystem being operatively connected to the Kth receiving means, said Kth booster subsystem including means for injecting the digital data onto said electronic transmission line, as a digital data signal, in the direction of the first end of said electronic transmission line in dependence upon said sync signal, said Kth booster subsystem further including means for injecting a booster signal onto said electronic transmission line to enhance the amplitude and rise time of the digital data signals injected onto said electronic transmission line by each of said N booster subsystems which is coupled to said electronic transmission line at a position between said clock means and said Kth booster subsystem, said Kth booster subsystem including:

a booster circuit, coupled to said electronic transmission



line, for receiving the sync signal and the digital data signals injected onto said electronic transmission line by each of said N booster subsystems which is coupled to said electronic transmission line at a position between said clock means and said Kth booster subsystem, for generating a received data signal, and for injecting the booster signal onto said electronic transmission line to combine with each of the digital data signals travelling on said electronic transmission line, in order to enhance the amplitude and rise time of each of the digital data signals, said booster circuit including:

a first coupling network, coupled to said electronic transmission line, for sensing the current on said electronic transmission line and for generating a first sensing signal; and

a second coupling network, coupled to said electronic transmission line, for sensing the voltage on said electronic transmission line and for generating a second sensing signal;

switching means, operatively connected to said first and second coupling networks, for alternately switching between first and second states, so that said booster circuit injects the booster signal onto said electronic transmission line, wherein the booster signal includes a voltage signal injected onto said electronic transmission line through said first coupling network and a current signal injected onto said electronic transmission line through said second coupling network; and

booster controller means, operatively connected to said booster circuit, said Kth receiving means, and said electronic transmission line, for receiving the digital data from said Kth receiving means and the received data signal from said booster circuit, and for generating a transmit data signal to be injected onto said electronic transmission line, by said digital data injecting means of said Kth booster subsystem, as the digital data signal.

4,553,248

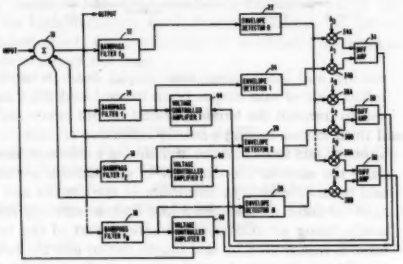
ANALOG ADAPTIVE MAGNITUDE EQUALIZER

Todd R. Reed, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 10, 1983, Ser. No. 502,920

Int. Cl.⁴ H04B *3/14*

U.S. Cl. 375—14 **12 Claims**



9. An adaptive magnitude equalizer in a signal channel for equalizing a magnitude transfer function as adapted for an input signal spectrum, said equalizer comprising:

sample means for generating a plurality of sampled bandpass signals having amplitudes characteristic of the input signal;

means for detecting the amplitude of each of said plurality of sampled bandpass signals;

means for supplying a reference signal;

difference means for generating a plurality of difference signals indicative of the difference between the amplitude of each of said plurality of sampled bandpass signals and said reference signal;

means for amplifying each of said plurality of sampled bandpass signals by a gain factor proportional to the absolute value of its associated difference signal to produce a plurality of modified signals; and

means for summing the input signal with the plurality of modified signals to produce an output signal equalized to the desired transfer function for the input signal spectrum.

4,553,249

METHOD AND CIRCUIT ARRANGEMENT FOR CONVERTING A BINARY SIGNAL, ALTERNATING BETWEEN TWO LEVELS, TO A PULSE CODE SIGNAL WHICH COMPRISES DATA PULSES AND RENEWAL PULSES

Jan Goerne, and Hans-Norbert Toussaint, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,965

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1982, 3247120

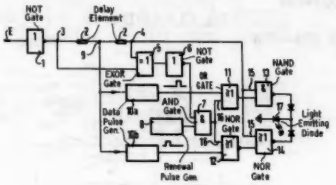
Int. Cl.⁴ H03K *5/15*

U.S. Cl. 375—25 **7 Claims**

1. A method of converting a binary signal, alternating between a first level and a second level, into a pulse code signal which includes a data pulse having a first polarity when the

binary signal changes from the first level to the second level and having a second polarity when the binary signal changes from the second level to the first level, and renewal pulses between the data pulses and having the same polarity as a last-occurring data pulse, comprising the steps of:

generating the renewal pulses with a renewal pulse generator independently of the level changes of the binary signal and at a predetermined pulse repetition frequency; generating the individual data pulses, in relation to the respective level change of the binary signal and each individual data pulse delayed by a first predetermined time interval; and



producing an inhibit signal from each level change of the binary signal and inhibiting the output of the renewal pulse generator with the inhibit signal for a second predetermined time interval beginning at the time of the respective level change.

4,553,250

SIGNAL TRANSMISSION SYSTEM

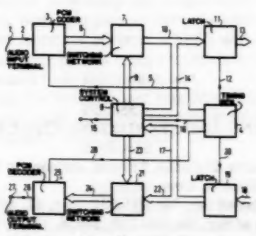
Stewart F. Bryant, Reading, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,891

Claims priority, application United Kingdom, Dec. 2, 1981, 8136349

Int. Cl.⁴ H04L *1/22*

U.S. Cl. 375—34 **4 Claims**



1. A signal transmission system comprising a transmitter and a receiver at each end of a transmission link in which a signal to be transmitted is pulse code modulated, characterized in that the transmission link comprises an individual channel for each bit of a word of the pulse code modulated signal and the transmission system comprises means for assessing the quality of each channel and means for assigning the bits of the word to the channels according to the quality of each channel, so that the higher the significance of the bit the better the quality of the channel that is assigned to that bit.

4,553,251

METHOD AND SYSTEM FOR SYNCHRONIZING THE CODING AND DECODING DURING THE TRANSMISSION OF DIGITAL CODED DATA

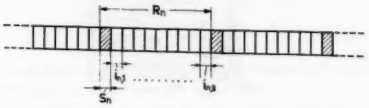
Peter Hartmann, Hausen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 12, 1983, Ser. No. 522,652

Claims priority, application Switzerland, Aug. 19, 1982, 4952/82

Int. Cl.⁴ H04L *7/00*

U.S. Cl. 375—114 **8 Claims**



1. A method for synchronizing coding and ecoding during transmission of digital, coded data from a transmitter to a receiver, comprising:

generating at the transmitter a sequence of transmitter synchronization signals at a first clock frequency;

periodically inserting said sequence of transmitter synchronization signal into a data stream transmitted at a second clock rrequency so as to form an encoded signal sequence in the form of plural frames each equal to the cycle duration of the first clock frequency and each including plural slots equal to the cycle duration of the second clock frequency;

transmitting said encoded signal sequence so as to be received by the receiver;

generating at said receiver at least one sequence of receiver synchronization signals which coincides with the sequence of transmitter synchronization signals and which is synchronized with the transmitter synchronization signals of the received encoded signal sequence;

dividing the received encoded signal corresponding to the cycle duration of the first clock frequency, into plural time slots equal to the cycle duration of the second clock frequency;

successively storing the data content of each slot offset by a clock cycle duration of the second clock frequency in a respective subsignal generator;

thereafter switching all subsignal generators over to self-production of the signal sequences read into the respective subsignal generator;

correlating the self-produced signal sequences of the subsignal generators with the data content of the corresponding slots of the incoming received data sequence;

determining that synchronization has occurred as a function of a predetermined correlation of a self-produced signal sequence with the received signal sequence in any said subsignal generator;

synchronizing all other subsignal generators upon determining a synchronmization of one of said subsignal generators; and

thereafter switching over all subsignal generators over to autonomous operation in which each subsignal generator produces the sequence of synchronization signals transmitted, but offset by the cycle duration of the second clock frequency.

4,553,252

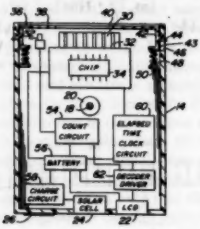
COUNTING COMPUTER SOFTWARE CARTRIDGE

Harris H. Egendorf, 8016 Bustleton Ave., Philadelphia, Pa. 19152

Continuation-in-part of Ser. No. 332,783, Dec. 21, 1981, Pat. No. 4,475,222. This application Dec. 6, 1982, Ser. No. 446,847

Int. Cl.[4] G11B *23/04*; G06M *1/08*

U.S. Cl. 377—15 7 Claims



7. In a cartridge adapted for insertion and use in a computer, the cartridge including electronic memory containing a stored program for use with the computer, the combination comprising a housing, sensing means for sensing insertion of the cartridge in the computer and for generating an electrical signal indicating the same, counting means electrically coupled to the sensing means so as to receive said electrical signal and for maintaining an electronic count of the number of insertions of the cartridge in the computer, and display means electrically coupled to said counting means and located on the housing for displaying the count maintained by said counting means.

4,553,253

PLANE-GRATING MONOCHROMATOR

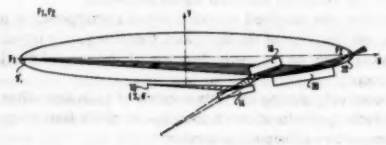
Helmuth Petersen, Berlin, Fed. Rep. of Germany, assignor to Berliner Elektronenspeicherring Gesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 327,657, Dec. 4, 1981,. This application Jun. 20, 1984, Ser. No. 704,131

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045931

Int. Cl.[4] G01J *3/18*; G02B *27/44*; G21K *1/06*

U.S. Cl. 378—084 9 Claims



1. A plane-grating monochromator, having a flat diffraction grating, an entry aperture through which a bunch of wave radiation to be spectrally decomposed passes and strikes the diffraction grating, an exit aperture, a hollow mirror for focusing the radiation decomposed by the diffraction grating into the exit aperture and an adjusting device, which effects a predetermined adjustment of the angle of incidence and emergence of the radiation with respect to the plane of the diffraction grating in accordance with the wavelength of the decomposed, substantially monochromatic radiation focused by the hollow mirror into the exit aperture, characterized in that the adjusting device keeps the quotient of the sine of the angle of emergence (β) divided by the sine of the angle of incidence (α) onto the diffraction grating, and thus the distance of a virtual source (S') of the decomposed radiation from the diffraction grating (16), constant and that the hollow mirror (20) is an ellipsoid mirror, which focuses the virtual source (S') into the exit aperture (22).

4,553,254

X-RAY DIAGNOSTIC SYSTEM COMPRISING AT LEAST ONE X-RAY GENERATOR AND X-RAY APPARATUS

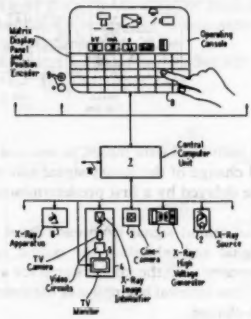
Eric Bach, Spardorf, and Dieter Schmidt, Hetzles, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 299,147, Sep. 3, 1981,. This application Dec. 23, 1983, Ser. No. 564,915

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034933

Int. Cl.[4] A61B *6/00*

U.S. Cl. 378—098 2 Claims



1. An x-ray diagnostic system comprising at least one x-ray high voltage generator, x-ray apparatus and auxiliary apparatus, such as a sheet film camera or an image intensifier television chain, and operating consoles for generator and apparatus control, the operating consoles each comprising an intelligent data display apparatus having a display screen with data representing regions, a central computer unit which controls the x-ray high voltage generator and the x-ray apparatus and effects the display of data of the x-ray diagnostic system on the data display apparatus, the data display apparatus of each operating console being connected with the central computer unit and including means providing respective data transmitting locations associated with respective data representing regions of the display screen for the purpose of data input to the central computer unit through contacting of the display screen at selected data representing regions so as to actuate the corresponding data transmitting locations.

4,553,255

REGULATING AND STABILIZING CIRCUIT FOR X-RAY SOURCE

Heikki Kanerva, Helsinki, Finland, assignor to Philips Medical Systems, Shelton, Conn.

Continuation of Ser. No. 215,582, Dec. 11, 1980, which is a continuation of Ser. No. 940,760, Sep. 8, 1978,. This application Aug. 7, 1984, Ser. No. 638,545

Claims priority, application Finland, Sep. 23, 1977, 772806

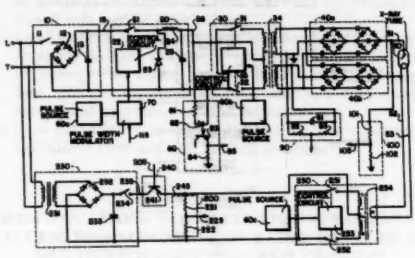
Int. Cl.[4] G03B *41/16*

U.S. Cl. 378—110 16 Claims

1. A method for regulating and stabilizing the radiation intensity level of an X-ray source including an X-ray tube, high voltage circuitry means for forming an electrical signal acting on the anode and cathode of said tube and filament power circuitry having a controllable means for supplying voltage to the filament of said tube, said method comprising:

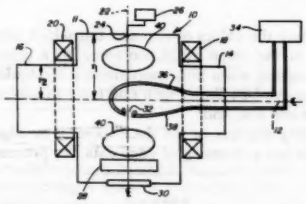
(a) forming a feedback signal from the output of the controllable means in said filament power circuitry;

(b) forming a feedback signal from the anode current of the X-ray tube, or quantities proportional thereto;
(c) forming a control signal from said feedback signals; and



(d) supplying said control signal to a control input of said controllable means.

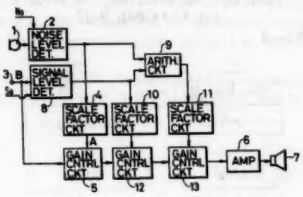
4,553,256
APPARATUS AND METHOD FOR PLASMA GENERATION OF X-RAY BURSTS
Kenneth G. Moses, 6330 Sattes Dr., Rancho Palos Verdes, Calif. 90274
Filed Dec. 13, 1982, Ser. No. 449,255
Int. Cl.[4] H01J *3/02, 35/30*
U.S. Cl. 378—137 **32 Claims**



1. An x-ray burst generator comprising:
target means for retaining a high Z target in a target location;
plasma means for producing and magnetically confining a ring plasma, including plasma electrons heated to a mean temperature in excess of about 1 MeV, with a portion of said confined ring plasma being proximate to and magnetically separated from said target; and
diverter means for bringing said ring plasma electrons into contact with a high Z target disposed at said target location to produce a burst of x-rays.

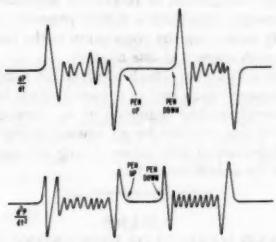
4,553,257
AUTOMATIC SOUND VOLUME CONTROL DEVICE
Shuichi Mori; Yasumasa Fukatsu, and Takashi Sakakibara, all of Saitama, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan
Filed Apr. 28, 1983, Ser. No. 489,291
Claims priority, application Japan, Apr. 28, 1982, 57-71908; May 26, 1982, 57-90403
Int. Cl.[4] H03G *3/00*
U.S. Cl. 381—57 **13 Claims**

1. In a device for amplifying and reproducing a sound signal in the presence of ambient noise, an automatic sound volume control device having the improvement comprising:
means for separately detecting a level of said ambient noise relative to a reference noise level;
means for separately detecting a level of sound signal relative to a reference sound level;
means for producing a control signal having a level determined in accordance with outputs of both said ambient noise level detecting means and said sound level detecting means;



means for setting an amplification gain of said sound signal in accordance with said control signal; and
means for amplifying and reproducing said sound signal in accordance with said gain.

4,553,258
SEGMENTATION ALGORITHM FOR SIGNATURE VERTIFICATION
Timothy J. Chainer, Mahopac, and Thomas K. Worthington, South Salem, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1983, Ser. No. 567,200
Int. Cl.[4] G06K *9/34*
U.S. Cl. 382—3 **8 Claims**



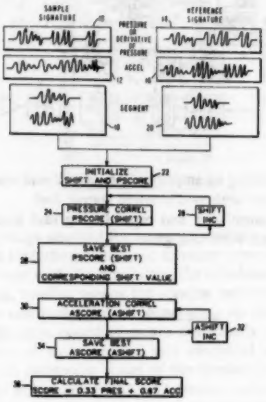
1. In a process for verifying a signature which comprises producing at least a first signal representative of the first time derivative of pressure transmitted by a writing instrument during the writing of at least one signature by a person whose identity is to be verified, the improved method of segmentating said first signal based on lifting said writing instrument from a writing surface comprising the steps of
computing from said first signal the second time derivative of the pressure,
examining said first and second time derivatives to detect quiet times indicative of lifting said writing instrument from a writing surface,
determining if the detected quiet times have a duration which exceeds a predetermined time period, and
testing the polarity of said second time derivative to determine if it is positive at the beginning and end of each detected quiet time.

4,553,259

SEMI-INDEPENDENT SHIFTING TECHNIQUE FOR SIGNATURE VERIFICATION

Timothy J. Chainer, Mahopac; Steven C. Gundersen, Peekskill, and Thomas K. Worthington, South Salem, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,202
Int. Cl.[4] G06K 9/22
U.S. Cl. 382—3 **3 Claims**



1. In a signature verification process including the steps of obtaining acceleration data and pressure data related to a given signature and comparing said data with reference data previously obtained from an identified signer, the improvement which comprises a method of enhancing the correlation or representative segments of the acceleration data which includes the steps of

performing correlations of respective segments of a reference pressure signal and a sample pressure signal by successively measuring the correlation as the two signals are shifted with respect to one another,

storing the shift values which produce the maximum correlation between each pair of pressure signal segments, and

shifting corresponding segments of acceleration data with respect to one another by an amount which is ±1 time units of the stored shift values during subsequent correlations of the acceleration data.

4,553,260

MEANS AND METHOD OF PROCESSING OPTICAL IMAGE EDGE DATA

Ronald A. Belt, Plymouth, and James D. Joseph, Oakdale, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 18, 1983, Ser. No. 476,743
Int. Cl.[4] G06K 9/46
U.S. Cl. 382—22 **11 Claims**

1. A method of processing edge data concerning an edge of an image where the edge gradient magnitude Si at a point i in space is approximated by an expression of the form $Si=(Xsi^2+Ysi^2)^{\frac{1}{2}}$, where Xsi and Ysi are the vertical and horizontal edge gradient components for point i lying along mutually orthogonal axes in said space, comprising:

sensing light from a scene, said scene including an object;

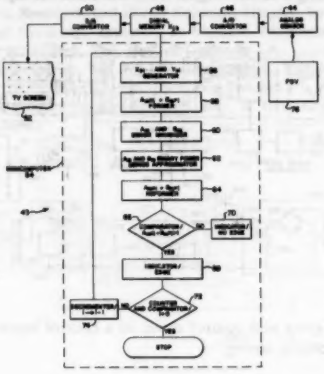
generating electrical signals with said sensed light, said electrical signals representing the intensity of said sensed light with sensed light from said object providing said image;

digitizing said electrical signals;

generating Xsi and Ysi from said digitized electrical signals;

forming the expression AmUi+BmVi where

m is an index and an integer greater than or equal to 1.



Am and Bm are constant coefficients to be determined,

$$Ui = \begin{cases} |Xsi| \text{ if } |Xsi| \geq |Ysi| \\ |Ysi| \text{ if } |Xsi| < |Ysi| \text{ and} \end{cases}$$

$$Vi = \begin{cases} |Ysi| \text{ if } |Xsi| \geq |Ysi| \\ |Xsi| \text{ if } |Xsi| < |Ysi|; \end{cases}$$

determining the values of Am and Bm which minimize the error in the value of Si according to a selected error computation when Si is approximated by AmUi+BmVi;

reforming AmUi+BmVi with said error minimizing values of Am and Bm; and

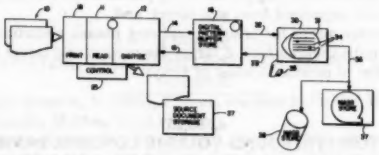
determining whether or not the i^{th} point is an edge point so that further processing of edge data can proceed.

4,553,261

DOCUMENT AND DATA HANDLING AND RETRIEVAL SYSTEM

Horst Froessl, Gutenbergstrasse 2-4, D-6944 Hemsbach, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,500
Int. Cl.[4] G06K 9/82
U.S. Cl. 382—57 **29 Claims**



1. An apparatus for gathering data from a plurality of source documents comprising

means for sequentially receiving documents, optically scanning each document and forming a series of digitalized signals representative of digital patterns closely approximating patterns on each document from which an image of each document can be reproduced;

means for imprinting in a predetermined area of each document a set of characters uniquely identifying each document and for producing electrical signals representative of said characters;

buffer means for storing the series of digitalized signals along with said signals representative of said characters;

means for recalling from said buffer means groups of said digitalized signals and for producing on a viewable screen an image of the digitalized patterns of the document from which said signals were formed;

manually operable control means for selecting a plurality of locations in said document image to identify selected segments of the digital patterns therein and for adding to said selected segments address information to control subsequent disposition of said segments; and

a mass data file for receiving and storing said segments in digitalized form and said address information.

4,553,262

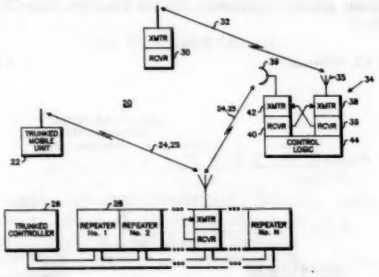
COMMUNICATIONS SYSTEM ENABLING RADIO LINK ACCESS FOR NON-TRUNKED RADIO UNITS TO A MULTIFREQUENCY TRUNKED TWO-WAY COMMUNICATIONS SYSTEMS

Richard H. Coe, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 25, 1983, Ser. No. 555,102

Int. Cl.⁴ H04B *7/155, 7/26;* **H04Q** *7/02*

U.S. Cl. 455—15 **20 Claims**



10. In a multifrequency trunked, two-way radio communications system having a trunked controller and a plurality of trunked remote stations selectively operating in an assigned one of plurality of information channels, a radio access link for providing one or more non-trunked remote stations operating on a separate, single fixed information channel access to the trunked system, said radio access link comprising:

means for receiving transmissions on the separate single channel from any of the one or more non-trunked remote stations and means to request a channel assignment from the trunked controller in response thereto, and

in response to a received assigned channel signal from the trunked controller to permit the said one or more non-trunked remote stations to operate on said assigned channel in the same manner as the plurality of trunked remote stations.

4,553,263

QUEUED COMMUNITY REPEATER MOBILE

Paul F. Smith, Fort Worth; Eric Schorman, Bedford; Timothy M. Burke, Fort Worth, and Charles N. Lynk, Jr., Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1983, Ser. No. 564,855

Int. Cl.⁴ H04B *1/00, 1/40*

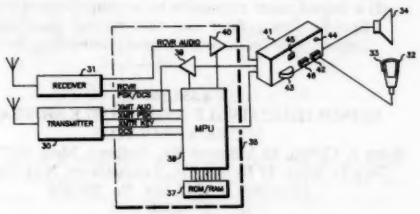
U.S. Cl. 455—54 **8 Claims**

1. A plurality of remote units each comprising a transmitter and a receiver and adapted to transmit and receive messages within a predetermined fleet of such remote units operating on a single communications channel shared by a plurality of other remote unit fleets and regulated by a central control station which assigns the single communications channel to a requesting remote unit fleet, each message having at least one transmission on the single communications channel, each remote unit comprising:

means for requesting service from the central control station on the single communications channel in response to a control signal received from the central station during a period of time following a served remote unit transmission;

means for receiving a grant of service to the predetermined remote unit fleet transmitted by the central control station on the single communications channel in response to said service request;

means for enabling the transmitter of the requesting remote unit in response to said grant of service and for enabling



the receiver of each of the other remote units in the predetermined fleet;

means for indicating an end-of-transmission condition at the conclusion of a real time transmission of the requesting remote unit to inform the central control station of said conclusion and stimulate said control signal from the central control station;

means for disabling the receiver of each remote unit of the predetermined fleet in response to the central control station recognizing an end-of-transmission condition; and

means for inhibiting the transmitter of each remote unit of the predetermined fleet if no additional transmissions are made by the predetermined fleet following said received control signal.

4,553,264

DOUBLE SUPERHETERODYNE TUNER

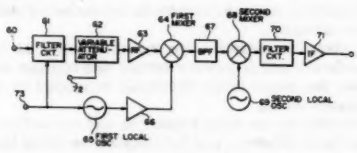
Makoto Hasegawa; Hiroshi Ohnishi, both of Tokyo, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 19, 1983, Ser. No. 533,810

Claims priority, application Japan, Sep. 17, 1982, 57-162503; Jul. 28, 1983, 58-138015

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—189 **7 Claims**



1. A double superheterodyne tuner comprising:

(a) an input filter having a frequency response for selectively passing a desired signal with the frequency response thereof being changed in accordance with a desired tuning frequency;

(b) a first local oscillator for producing a first local oscillator frequency having a predetermined frequency difference from that of said desired signal;

(c) a first mixer responsive to an output signal from said

input filter and said first local oscillator frequency for producing a first intermediate frequency which is larger than $3f_{Rmax}$ and is smaller than $3.4f_{Rmax}$ wherein f_{Rmax} is the upper limit of a receiving range of said tuner, the mixing by said first mixer being such that said first intermediate frequency is produced by subtracting the desired signal frequency from said first local oscillator frequency which is higher than said first intermediate frequency;

(d) a fixed-frequency filter for passing said first intermediate frequency from said first mixer;

(e) a second local oscillator for producing a predetermined second local oscillator frequency having a predetermined frequency difference from said first intermediate frequency;

(f) a second mixer responsive to an output signal from said fixed-frequency filter and said second local oscillator frequency for producing a second intermediate frequency.

4,553,265

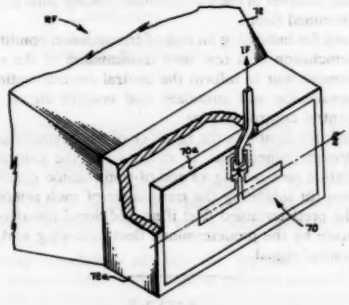
MONOLITHIC SINGLE AND DOUBLE SIDEBAND MIXER APPARATUS

Brian J. Clifton, 45 Millpond Rd., Sudbury, Mass. 01776, and Gary D. Alley, 17 Holton Clr., Londonderry, N.H. 03053

Filed Dec. 8, 1983, Ser. No. 559,609

Int. Cl.⁴ H04B 1/26

U.S. Cl. 455—325 **8 Claims**



1. A monolithic mixer apparatus comprising in combination:

a dielectric substrate mounted in a rectangular waveguide having a broad wall and a narrow wall, said dielectric substrate having a top and bottom surface, said dielectric substrate including a ground plane on said top surface, said dielectric substrate having a predetermined length, width, thickness, and dielectric constant, said length being slightly less than the dimension of the broad wall of said rectangular waveguide, said width being slightly less than the dimension of the narrow wall of said waveguide,

a slot coupler means formed on the top surface of said dielectric substrate,

a coplanar transmission line means disposed on said top surface of said dielectric substrate, said coplanar transmission line means being electrically connected to said slot coupler means,

a Schottky-barrier diode located on said top surface of said dielectric substrate, said Schottky-barrier diode having an anode and a cathode, said anode of said Schottky-barrier diode being connected by said coplanar transmission line to said slot coupler means,

a bypass capacitor located on said top surface of said dielectric substrate, one plate of said bypass capacitor being electrically connected to the cathode of said Schottky-barrier diode, the other plate of said bypass capacitor being electrically connected to a portion of said ground plane, and,

a bonding pad attached to said first capacitor plate to provide an IF signal output terminal, an RF signal and a local oscillator signal being applied to said dielectric substrate, said dielectric substrate establishing a dielectric surface wave resonance upon receipt of said RF signal and said local oscillator signal, said dielectric surface wave resonance propagating within and along the top surface of said dielectric substrate, said RF signal and said local oscillator signal propagating through said dielectric substrate to said slot coupler means, said slot coupler means being adjusted in position with respect to the centerline of the width of said dielectric substrate, said slot coupler means thereby utilizing said dielectric surface wave resonance to provide a reactive image termination at the upper sideband of said RF signal, said slot coupler means coupling said RF signal and said local oscillator signal through said coplanar transmission line means to said Schottky-barrier diode, an IF signal appearing in response to said RF and local oscillator signal at said IF signal output terminal.

4,553,266

R.F. CIRCUIT ARRANGEMENT

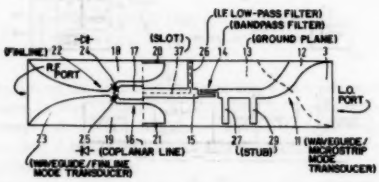
Robert N. Bates, Redhill, and Philip M. Ballard, Crawley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,501

Claims priority, application United Kingdom, Aug. 27, 1982, 8224612

Int. Cl.⁴ H04B 1/16, 1/26

U.S. Cl. 455—327 **6 Claims**



1. An R.F. circuit arrangement comprising an insulative substrate, at least one R.F. strip-type transmission line including a strip conductor and a ground plane conductor disposed on the substrate, and first and second diodes each electrically-connected between the strip conductor and a respective one of first and second portions of the ground plane conductor, said circuit arrangement including coupling means for D.C.-isolating and R.F.-coupling said first and second portions, comprising:

(a) a slot in the ground plane conductor for D.C. isolating the first and second portions thereof, said slot being sufficiently narrow to inhibit the coupling of R.F. energy into the slot;

(b) a housing comprising first and second conductive portions adjacent to the first and second portions of the ground plane conductor; and

(c) an insulative layer disposed between at least said first housing portion and said first ground plane portion;

said housing and said insulative layer effecting said R.F. coupling of the first and second portions of the ground plane conductor.

4,553,267

INFRARED TELEPHONE EXTENSION MODULATION SYSTEM

James W. Crimmins, 15 Nutmeg La., Wilton, Conn. 06897

Filed Jul. 31, 1981, Ser. No. 288,735

Int. Cl.⁴ H04B 9/00

U.S. Cl. 455—606 **8 Claims**

1. A portable telephone network extension system comprising:

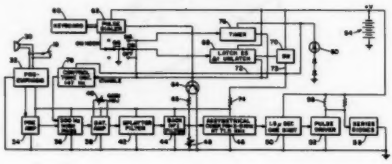
a portable transmitting unit having:

a plurality of series connected infared emitters positioned to emit in a pattern external of said transmitting unit;

means for generating audio signals;

means for providing FM low duty cycle pulses having a defined voltage amplitude of predetermined duration representative of said audio signals;

means for switching current through an inductor solely in response to each low duty cycle pulse and for directing the switched current through said plurality of emitters at



a voltage in excess of said defined voltage amplitude, directly subsequent to each low duty cycle pulse;

telephone network coupled means including:

means for receiving infrared emissions from said portable transmitting unit and for providing FM pulse demodulation thereof to receover said audio signals;

means for applying said demodulated audio signals to said telephone network;

means for receiving signals from said telephone network and broadcasting them to the region of said portable transmitting unit.

4,553,268

CIRCUIT ARRANGEMENT WITH A LASER DIODE FOR TRANSMISSION OF COMMUNICATION SIGNALS THROUGH A LIGHT WAVEGUIDE

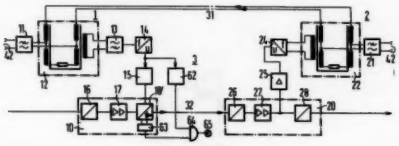
Bodo Tilly, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 249,653, Mar. 31, 1981, abandoned. This application May 14, 1984, Ser. No. 609,525

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1980, 3013533

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—607 **2 Claims**



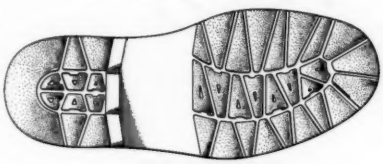
1. A circuit arrangement with a laser diode for the transmission of communications signals through a transmission link comprising a light waveguide, a transmitting device, a modulator in said transmitter, said laser diode in said modulator and connected to one end of said light waveguide, a receiving device connected to the second end of said light waveguide, a regulating device connected to said laser diode for controlling the optical output power, a return channel connected between said transmitting device and said receiving device, an analysis device in said receiving device which analyses the mean value or the peak value of the received communication signal which is characteristic of the optical transmitted power, and depending upon the characteristic value forms a control signal, means for transmitting said control signal through said return channel to said transmitting device from said receiving device, and said regulating device receiving said control signal to control the optical output power of the laser diode as a function of the received control signal, and characterized in that a signalling device is provided for analyzing both the control signal received by way of the return channel and the bias current of the laser including first means for producing an output when said return signal is less than a preset limit and second means for producing an output when said laser exceeds a predetermined limit, gate means connected to said first and second means, and an indicator connected to said gate means.

DESIGNS

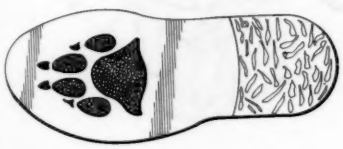
NOVEMBER 12, 1985

281,285
SPORT SHOE
Robert B. Campbell, New York, N.Y., and Junichi P. Landau, Taipei, Taiwan, assignors to BBC International Ltd., New York, N.Y.
Filed Mar. 23, 1983, Ser. No. 478,149
Term of patent 14 years
U.S. Cl. D2—309

281,286
FOOTWEAR OUTER SOLE
Victor P. Mangini, Sudbury, and Anthony M. McAlear, Jr., Scituate, both of Mass., assignors to American Footwear Corporation, Fitchburg, Mass.
Filed Jul. 5, 1983, Ser. No. 510,955
Term of patent 14 years
U.S. Cl. D2—320



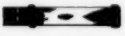
281,287
SHOE SOLE
Jean F. Vitrac, Scivira La., New Braintree, Mass. 01531
Filed Feb. 28, 1983, Ser. No. 470,764
Term of patent 14 years
U.S. Cl. D2—321



281,288
COMBINED UMBRELLA AND DOG REPELLENT HOLDER
Jack G. Richardson, and Dorothy L. Richardson, both of 5842 Candlewood St., Lakewood, Calif. 90713
Filed May 6, 1983, Ser. No. 492,184
Term of patent 14 years
U.S. Cl. D2—400

281,289
DRUM CASE
Neal E. Graham, 7230 Pana Dr., Fort Wayne, Ind. 46815
Filed Aug. 19, 1983, Ser. No. 524,652
Term of patent 14 years
U.S. Cl. D3—30.1

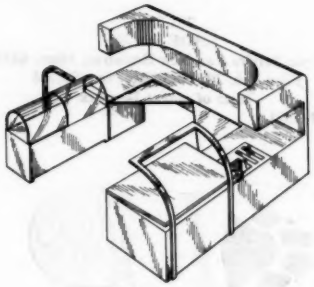
281,290
RACKET BAG
Bonny Beigel, 140-55 34th Ave., Linden Hill, N.Y. 11354
Filed Sep. 1, 1983, Ser. No. 528,589
Term of patent 14 years
U.S. Cl. D3—36



281,291
LINT BRUSH OR SIMILAR ARTICLE
John H. Schuler, II, Littlestown, Pa., assignor to The J. H. Schuler Company, Hanover, Pa.
Filed Apr. 1, 1983, Ser. No. 481,562
Term of patent 14 years
U.S. Cl. D4—137

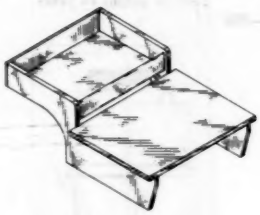
281,292
CHAIR
Hartmut Engel, Freiberg am Neckar, and Manfred Elzenbeck, Steinheim, both of Fed. Rep. of Germany, assignors to August Froscher GmbH & Co., K.G., Steinheim, Fed. Rep. of Germany
Filed Dec. 29, 1982, Ser. No. 454,267
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, Band XII Nr. 1167
Term of patent 14 years
U.S. Cl. D6—380

281,293
COMPUTER WORK STATION
Joan O. Johnston, 2000 E. 12th Ave., Denver, Colo. 80206
Filed Feb. 7, 1983, Ser. No. 464,389
Term of patent 14 years
U.S. Cl. D6—420



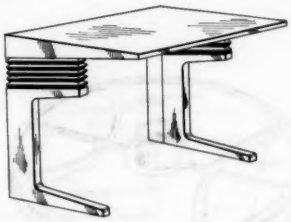
281,294
DESK
Rolf Hoppe, 162 Passaic Ave., Roseland, N.J. 07068
Filed May 20, 1982, Ser. No. 379,845
Term of patent 14 years
U.S. Cl. D6—422

281,295
COMBINED PRINTER AND PAPER STAND
Maurice H. Gunyon, 402 N. Branson St., Marion, Ind. 46952
Filed Sep. 23, 1983, Ser. No. 535,319
Term of patent 14 years
U.S. Cl. D6—474



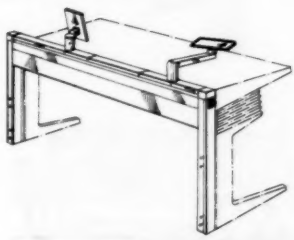
281,296
CANDY DISH DISPLAY
Martin Umanoff, 26 Windsor Rd., Great Neck, N.Y. 11021
Filed Jan. 20, 1983, Ser. No. 459,398
Term of patent 14 years
U.S. Cl. D6—474

281,297
WORKTABLE OR SIMILAR ARTICLE
Hartmut H. Esslinger, Altensteig, Fed. Rep. of Germany, assignor to Konig & Neurath Kommanditgesellschaft, Fed. Rep. of Germany
Filed Feb. 10, 1983, Ser. No. 465,445
Term of patent 14 years
U.S. Cl. D6—484

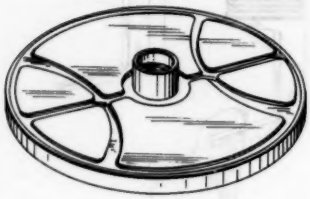


281,298
TABLE
Frank Gayeski, Hackensack, N.J., and Marlene Andrich, New York, N.Y., assignors to Gayeski Furniture Coordinates, Inc., Panama City, Fla.
Filed Dec. 8, 1982, Ser. No. 447,985
Term of patent 14 years
U.S. Cl. D6—486

281,299
APPLIANCE HOLDER FOR ATTACHMENT TO A WORK TABLE
Hartmut H. Esslinger, Altensteig, Fed. Rep. of Germany, assignor to Konig & Neurath Kommanditgesellschaft, Fed. Rep. of Germany
Filed Feb. 10, 1983, Ser. No. 465,449
Term of patent 14 years
U.S. Cl. D6—491



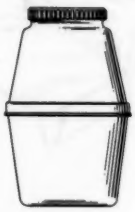
281,300
BASE FOR SUPPORTING AN EXHIBITION STALL UPRIGHT POST
Harry Glück, Vienna, Austria, assignor to Ellesse International S.p.A., Ellera Umbra, Italy
Filed Oct. 14, 1982, Ser. No. 434,356
Term of patent 14 years
U.S. Cl. D6—495



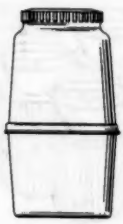
281,301
SPAGHETTI MEASURING GAUGE
Dicksie Spolar, 17376 Filbert, Fontana, Calif. 92335
Continuation of Ser. No. 379,884, May 19, 1982, abandoned.
This application Nov. 21, 1984, Ser. No. 674,356
Term of patent 14 years
U.S. Cl. D7—50

281,302
BOTTLE
Philip F. Hartung, 655 Main St., East Greenwich, R.I. 02818
Filed Jul. 11, 1983, Ser. No. 512,595
Term of patent 14 years
U.S. Cl. D9—370

281,303
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,561
Term of patent 14 years
U.S. Cl. D9—398

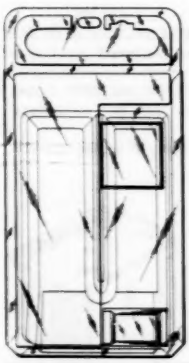


281,304
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,564
Term of patent 14 years
U.S. Cl. D9—398



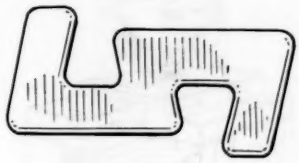
281,305
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,581
Term of patent 14 years
U.S. Cl. D9—398

281,306
PACKAGING CONTAINER FOR A TELEPHONE
Kenneth Reichenstein, Floral Park, N.Y., assignor to Webcor Electronics, Inc., Garden City, N.Y.
Filed Apr. 15, 1983, Ser. No. 485,262
Term of patent 14 years
U.S. Cl. D9—415

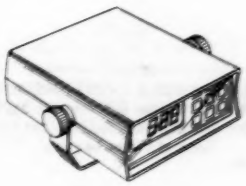


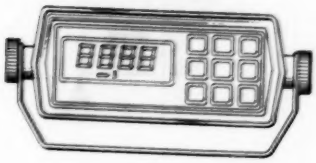
281,307
BOTTLE CAP
Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414, and Gino H. Cassai, 924 E. 96 St., Brooklyn, N.N.Y. 11236
Filed Mar. 5, 1982, Ser. No. 355,051
Term of patent 14 years
U.S. Cl. D9—443

281,308
LOOSE FILL PACKING ELEMENT
Harry Bussey, Jr., P.O. Box 115, Serpentine Rd., Navesink, N.J. 07752
Filed May 2, 1983, Ser. No. 490,876
Term of patent 14 years
U.S. Cl. D9—456

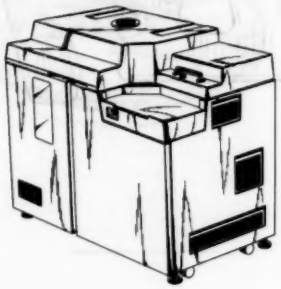


281,309
DIGITAL DEPTH METER
Rebecca A. Highstreet, Azusa; Raymond G. Shield, West Covina, and Nancy A. Jensen, Pasadena, all of Calif., assignors to Signet Scientific Co., El Monte, Calif.
Filed Apr. 25, 1983, Ser. No. 488,123
Term of patent 14 years
U.S. Cl. D10—70

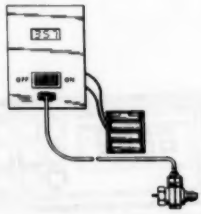




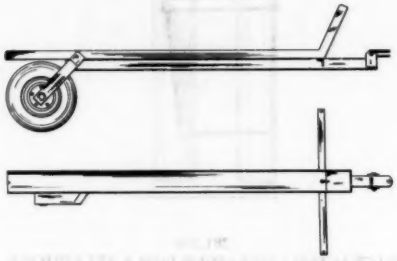
281,310
AUTOMATIC CHEMICAL ANALYZER
Yasuo Hattori, Hachioji; Masaharu Kame, Sagamihara, and Masahiko Sakurada, Machida, all of Japan, assignors to Olympus Optical Company Ltd., Japan
Filed Apr. 8, 1983, Ser. No. 483,112
Claims priority, application Japan, Oct. 19, 1982, SHO/57-47731
Term of patent 14 years
U.S. Cl. D10—81



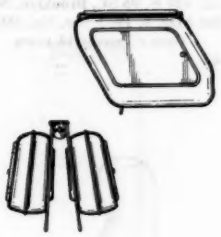
281,311
SPEEDOMETER RATIO CHECKER
William C. Spate, 2652 Lapeer Rd., Pontiac, Mich. 48057
Filed Sep. 30, 1982, Ser. No. 430,136
Term of patent 14 years
U.S. Cl. D10—98



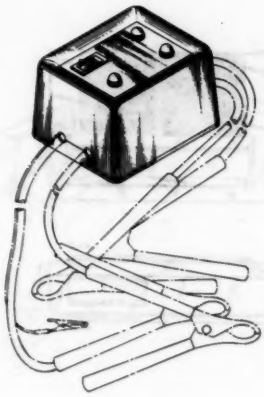
281,312
SINGLE-RAIL MOTORCYCLE TRAILER
Gerald B. Russell, 2800 Idle Creek, Arlington, Tex. 76016
Filed Jan. 31, 1983, Ser. No. 462,347
Term of patent 14 years
U.S. Cl. D12—101



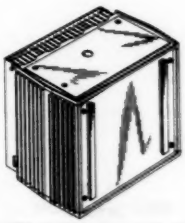
281,313
BICYCLE CARRIER BAGS
Brian R. Bepristis, San Jose, and Richard A. Bepristis, Campbell, both of Calif., assignors to Astro Nautics Plastic Mfg. Corporation, Santa Clara, Calif.
Filed Feb. 16, 1983, Ser. No. 467,092
Term of patent 14 years
U.S. Cl. D12—158

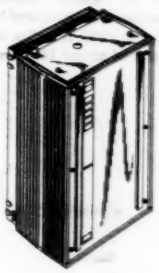


281,314
JUNCTION HOUSING FOR BATTERY JUMPER CABLES
Bobby L. Bates, San Dimas, Calif., assignor to Bates - Johnson & Co., Inc., San Dimas, Calif.
Filed May 24, 1982, Ser. No. 381,057
Term of patent 14 years
U.S. Cl. D13—10



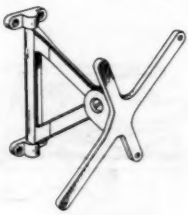
281,315
CASING FOR ELECTRICAL EQUIPMENT
Lehmann Kjeld, Sondorborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 7, 1983, Ser. No. 539,930
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1983, URA 413/83
Term of patent 14 years
U.S. Cl. D14—40





281,316
OMNI-DIRECTIONAL SPEAKER ENCLOSURE
Phillip A. Gary, P.O. Box 414, Tipp City, Ohio 45371
Filed Jul. 28, 1983, Ser. No. 518,257
Term of patent 14 years
U.S. Cl. D14—33

281,317
WALL MOUNTED SUPPORT FOR LOUDSPEAKER OR THE LIKE
Richard J. Whitaker, Guernsey, Channel Islands, assignor to Broadaker Co., Ltd., Guernsey, Channel Islands
Filed Oct. 28, 1983, Ser. No. 546,297
Claims priority, application United Kingdom, Apr. 28, 1983, 1012754
Term of patent 14 years
U.S. Cl. D14—38



281,318
TV BAND RADIO RECEIVER
Grant Davidson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 2, 1982, Ser. No. 414,170
Term of patent 14 years
U.S. Cl. D14—68

281,319

TELEVISION RECEIVER

Toshikatsu Hirose; Teruo Ishikawa, both of Osaka; Takahiro Satoh, Hyogo, and Yoshitaka Shigeta, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jun. 20, 1983, Ser. No. 505,861

Claims priority, application Japan, Dec. 20, 1982, 57-57126

Term of patent 14 years

U.S. Cl. D14—80

281,320

MAGNETIC TAPE TRANSPORT

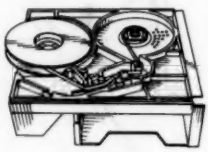
John Knott, Wells, England, assignor to EMI Limited, Hayes, England

Filed Mar. 9, 1982, Ser. No. 356,741

Claims priority, application United Kingdom, Sep. 11, 1981, 1002445

Term of patent 14 years

U.S. Cl. D14—108



281,321

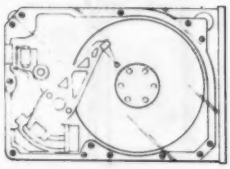
WINCHESTER DISC DRIVE

Harold T. Wright, Santa Clara, Calif., assignor to Maxtor Corporation, San Jose, Calif.

Filed Nov. 24, 1982, Ser. No. 444,466

Term of patent 14 years

U.S. Cl. D14—109



281,322

ELECTRONIC PRINTER

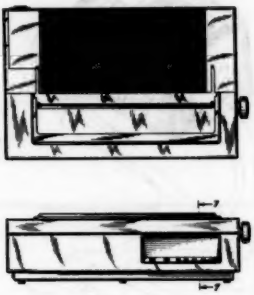
Kenji Ekuan, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,660

Claims priority, application Japan, Oct. 12, 1982, 57-46327

Term of patent 14 years

U.S. Cl. D14—111



281,323

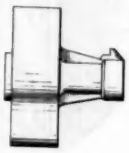
THROTTLE POSITION SENSOR

Donald A. Overcash, San Juan Capistrano; Lloyd E. Hall, Fullerton, and Guenter W. Mueller, Santa Ana, all of Calif., assignors to Duncan Electronics, Costa Mesa, Calif.

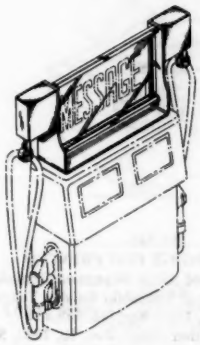
Filed May 3, 1983, Ser. No. 491,074

Term of patent 14 years

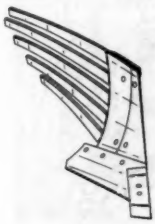
U.S. Cl. D15—5



281,324
COMBINED FUEL PUMP DISPLAY AND HOSE RETRACTOR ASSEMBLY
Douglas C. Badgley, 630 Brandt St., Dayton, Ohio 45404
Filed May 6, 1983, Ser. No. 492,235
Term of patent 14 years
U.S. Cl. D15—9.2



281,325
PLOW-BOTTOM
Johan Nordland, Kvernaland, Norway, assignor to Kverneland A/S, Kvernaland, Norway
Filed Aug. 11, 1983, Ser. No. 522,236
Term of patent 14 years
U.S. Cl. D15—11



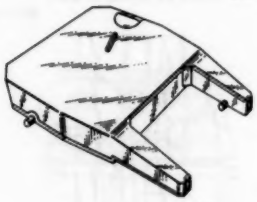
281,326
TOOTH FOR BUCKETS ON DIGGING AND LOADING MACHINES
Olav Nja, Kvernaland, Norway, assignor to Kverneland A/S, Kvernaland, Norway
Filed Jun. 6, 1983, Ser. No. 501,117
Claims priority, application Norway, Dec. 28, 1982, 63617
The portion of the term of this patent subsequent to Sep. 25, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—29

281,327
FRONT PANEL FOR REFRIGERATOR OR SIMILAR ARTICLE
Joseph Pota, 9727 Mt. Pisgah Rd., Apt. 1009, Silver Spring, Md. 20903
Filed Sep. 29, 1982, Ser. No. 426,378
Term of patent 14 years
U.S. Cl. D15—81

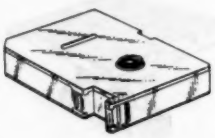
281,328
SAW TABLE
Edward A. Irelan, Columbia, Mo.; Harold E. Folkerth, Dayton, Ohio; John G. Legler, Huber Heights, and Garry W. Woods, Dayton, both of Ohio, assignors to Shopsmith, Inc., Vandalia, Ohio
Filed Nov. 16, 1983, Ser. No. 552,575
Term of patent 14 years
U.S. Cl. D15—133

281,329
TRANSPARENT NOVELTY GLASSES WITH PHOTOGRAPHIC INSERT
Benjamin T. Harrell, 200 Townview Terrace Dr., Apt. 1252, Knoxville, Tenn. 37915
Filed Oct. 12, 1982, Ser. No. 433,789
Term of patent 14 years
U.S. Cl. D16—104

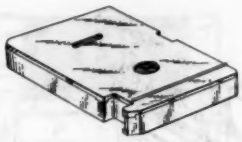
281,330
INK RIBBON CARTRIDGE FOR ELECTRONIC TYPEWRITER
Masahiro Kando, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 28, 1983, Ser. No. 555,508
Claims priority, application Japan, Jun. 1, 1983, 58-23457
Term of patent 14 years
U.S. Cl. D18—12



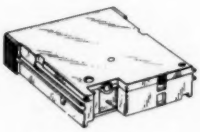
281,331
INK RIBBON CASSETTE FOR TYPEWRITER
Richard Nibley, Tokyo, and Masasumi Nagashima, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,452
Claims priority, application Japan, Jun. 13, 1983, 58-25419
Term of patent 14 years
U.S. Cl. D18—12



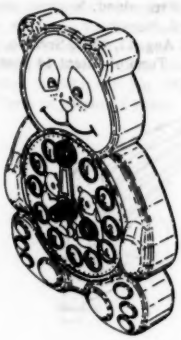
281,332
INK RIBBON CASSETTE FOR WORD PROCESSOR
Richard Nibley, Tokyo, and Masasumi Nagashima, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,456
Claims priority, application Japan, Jun. 13, 1983, 58-25413
Term of patent 14 years
U.S. Cl. D18—12



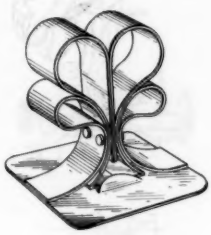
281,333
INK CARTRIDGE FOR PRINTER
Richard Nibley, Tokyo, and Akira Miyagawa, Tanashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,454
Claims priority, application Japan, Jun. 13, 1983, 58-25417
Term of patent 14 years
U.S. Cl. D18—22



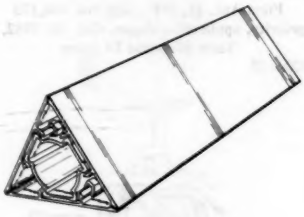
281,334
CHILD'S CLOCK FIGURE TOY
Peter G. Adams, East Grinstead, England, assignor to Hestair Kiddicraft Limited, Surrey, England
Filed May 2, 1983, Ser. No. 490,861
Claims priority, application United Kingdom, Nov. 12, 1982, 1009673
Term of patent 14 years
U.S. Cl. D19—64



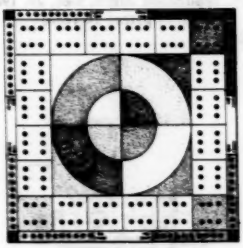
281,335
STORAGE RACK
Stephen R. Welch, 1227 S. Wilke Rd., Arlington Heights, Ill. 60005
Filed Apr. 15, 1983, Ser. No. 485,406
Term of patent 14 years
U.S. Cl. D19—86



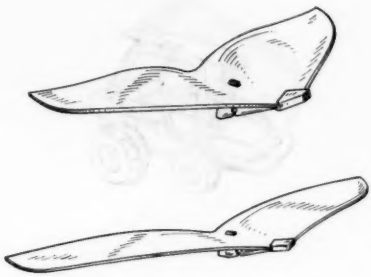
281,336
ROTATABLE DISPLAY ELEMENT FOR CHANGEABLE MESSAGE SIGN
Stig B. Ahlgren, Kopparberbsgatan 23, Malmo, Sweden (20120)
Filed Jul. 19, 1983, Ser. No. 515,160
Claims priority, application Sweden, Jan. 27, 1983, 83-0223
Term of patent 14 years
U.S. Cl. D20—21



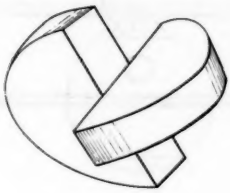
281,337
GAME BOARD
Terry B. Cutler, 5020 Woodman Ave., Sherman Oaks, Calif. 91423
Filed Apr. 8, 1983, Ser. No. 483,426
Term of patent 14 years
U.S. Cl. D21—34



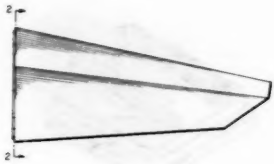
281,338
TOY GLIDER
Geoffrey P. Gorick, Killarney Heights, and Robert W. Day, Mosman, both of Australia, assignors to Acme-Gorick Pty. Ltd., New South Wales, Australia
Filed Mar. 3, 1983, Ser. No. 471,749
Term of patent 14 years
U.S. Cl. D21—89



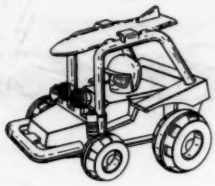
281,339
PUZZLE TOY
John Hinnen, 307 W. Melbourne Ave., Peoria, Ill. 61604
Filed Jun. 13, 1983, Ser. No. 503,697
Term of patent 14 years
U.S. Cl. D21—104



281,340
TOY PLAYHOUSE
Richard P. Nadeau, Frankfort, N.Y., assignor to Zorcom Enterprise, Inc., Utica, N.Y.
Filed Sep. 6, 1983, Ser. No. 529,648
Term of patent 14 years
U.S. Cl. D21—114



281,341
TOY VEHICLE
Kam H. Lau, Chaiwan, Hong Kong, assignor to Far East Toys & Novelties Manufacturing Limited, Hong Kong, Hong Kong
Filed Aug. 23, 1983, Ser. No. 525,667
Claims priority, application United Kingdom, Apr. 27, 1983, 1012725
Term of patent 14 years
U.S. Cl. D21—136

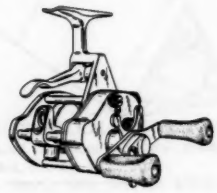


281,342
POP-UP TOY
Simon Gompes, Cannenburg 31, Amsterdam, Netherlands
Filed Jul. 25, 1983, Ser. No. 516,945
Claims priority, application United Kingdom, Jan. 26, 1983, 1011060
Term of patent 14 years
U.S. Cl. D21—151

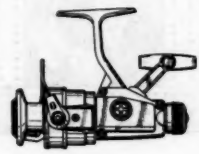
281,343
LEG EXERCISER OR SIMILAR ARTICLE
Irwin M. Krive, 31 Slocum Ave., Port Washington, N.Y. 11050
Filed Jul. 21, 1983, Ser. No. 516,302
Term of patent 14 years
U.S. Cl. D21—192

281,344
BOW HOLDER
J. Douglas Duke, 7010 Ficken Rd., Cedar Hill, Mo. 63016
Filed Jan. 26, 1983, Ser. No. 461,008
Term of patent 14 years
U.S. Cl. D22—13

281,345
FISHING REEL
Takashi Atobe, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 486,173
Claims priority, application Japan, Oct. 18, 1982, 57-47297
Term of patent 14 years
U.S. Cl. D22—25

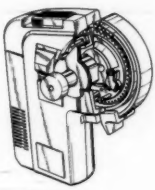


281,346
FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Tokyo, Japan, assignors to Daiwa Seiko Inc., Tokyo, Japan
Filed Apr. 20, 1983, Ser. No. 486,770
Claims priority, application Japan, Dec. 29, 1982, 57-58575
Term of patent 14 years
U.S. Cl. D22—25



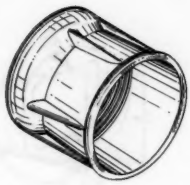
281,347
FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 20, 1983, Ser. No. 486,769
Claims priority, application Japan, Dec. 28, 1982, 57-58118
Term of patent 14 years
U.S. Cl. D22—25

281,348
ELECTRICALLY OPERATED FISHLINE TIER
Tsuguyoshi Sadashima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 20, 1983, Ser. No. 506,091
Claims priority, application Japan, Jan. 24, 1983, 58-2411
Term of patent 14 years
U.S. Cl. D22—31



281,349
AIR NOZZLE
Milton Goldish, Chicago, Ill., assignor to Milton Industries Inc., Chicago, Ill.
Filed Sep. 24, 1982, Ser. No. 422,894
Term of patent 14 years
U.S. Cl. D23—34

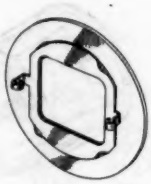
281,350
THREAD PROTECTOR FOR PIPES
Richard L. Heier, 64 Lucky Heights, Singapore, 1646, Singapore
Filed Sep. 17, 1982, Ser. No. 419,508
Term of patent 14 years
U.S. Cl. D23—41



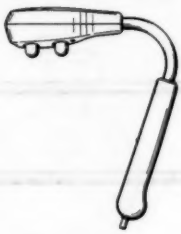
281,351
STOVE DAMPER HANDLE
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Filed Feb. 22, 1983, Ser. No. 468,090
Term of patent 14 years
U.S. Cl. D23—127

281,352
ELECTRIC FAN
Shu-Fen Chang, 50, Sung-Chiang St., Pan Chiao Taipei Hsien, Taiwan (220)
Filed Jan. 10, 1983, Ser. No. 456,840
Term of patent 14 years
U.S. Cl. D23—155

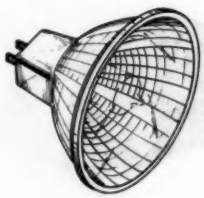
281,353
COLLIMATOR FOR DENTAL X-RAY INSTRUMENT AIMING RINGS
Nicholas J. Sico, Jr., Elgin, Ill., assignor to Rinn Corporation, Elgin, Ill.
Filed Feb. 7, 1983, Ser. No. 464,610
Term of patent 14 years
U.S. Cl. D24—2



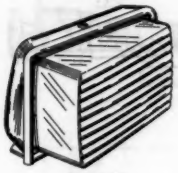
281,354
ELECTRIC MASSAGE INSTRUMENT
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, Tokyo; Kazuo Nagata, Tokyo, and Yukio Ishige, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 11, 1983, Ser. No. 522,296
Claims priority, application Japan, Mar. 25, 1983, 58-12250
Term of patent 14 years
U.S. Cl. D24—41



281,355
PROJECTION LAMP REFLECTOR
Lawrence R. Fraley, West Boxford, Mass., and Arnold E. Westlund, Jr., Winchester, Ky., assignors to GTE Products Corporation, Stamford, Conn.
Filed Oct. 3, 1983, Ser. No. 538,723
Term of patent 14 years
U.S. Cl. D26—2



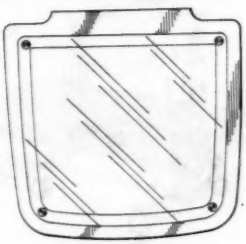
281,356
MOTORCYCLE LIGHT
Michael G. Ofield, 1061 Harding St., Long Beach, Calif. 90810
Continuation-in-part of Ser. No. 400,862, Jul. 22, 1982, abandoned. This application Jul. 5, 1983, Ser. No. 510,651
Term of patent 14 years
U.S. Cl. D26—28



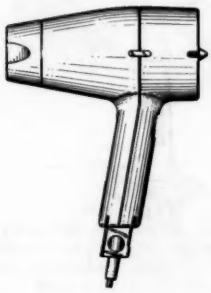
281,357
TABLE LAMP
Ernesto Gismondi, Piazzetta Brera, 24/4, Milan, Italy
Filed Feb. 28, 1983, Ser. No. 470,834
Claims priority, application Italy, Sep. 10, 1982, 22841B/82
Term of patent 14 years
U.S. Cl. D26—63

281,358
MUSHROOM SHAPED LANDSCAPE LIGHT
Claude E. Doner, Box 15C, R.D. #2, New Providence, Pa. 17560
Filed Mar. 18, 1983, Ser. No. 464,650
Term of patent 14 years
U.S. Cl. D26—69

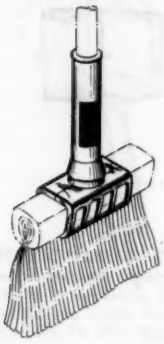
281,359
HEADLIGHT COVER FOR MOTORCYCLE FAIRING
Michael G. Offeld, 1061 Harding St., Long Beach, Calif. 90810
Filed Jul. 5, 1983, Ser. No. 510,650
Term of patent 14 years
U.S. Cl. D26—139



281,360
HAIR DRYER
John Wistrand, New Canaan, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Oct. 5, 1983, Ser. No. 539,200
Term of patent 14 years
U.S. Cl. D28—13

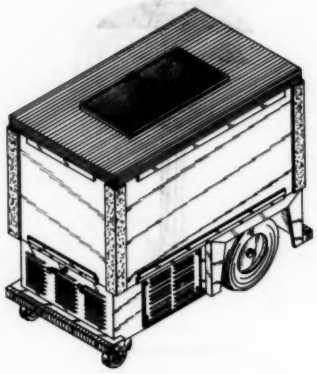


281,361
MOP HOLDER
Philip Jaros, Gloversville, and Paul O. Wright, Schenectady, both of N.Y., assignors to White Mop Wringer Company, Fultonville, N.Y.
Filed Jul. 5, 1983, Ser. No. 510,721
Term of patent 14 years
U.S. Cl. D32—50

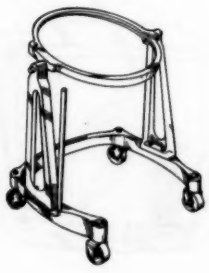


281,362
BOWLING LANE DUSTER
Donald E. Ingermann, Arvada; Ronald L. Smith, Boulder; Jimmie L. Knoll; Stephen F. Caffrey, both of Arvada; Endre Barsi, Denver, and Joseph C. Dechant, Aurora, all of Colo., assignors to Century International Corp., Golden, Colo.
Filed Sep. 6, 1983, Ser. No. 529,574
Term of patent 14 years
U.S. Cl. D32—50

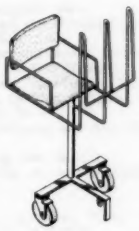
281,363
VENDING CART
Thomas Carvel, Chauncey, N.Y., assignor to Carvel Corporation, Yonkers, N.Y.
Filed Nov. 15, 1983, Ser. No. 552,210
Term of patent 14 years
U.S. Cl. D34—20



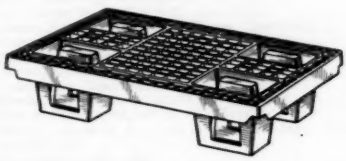
281,364
DOLLY FOR HOLDING AND TILTING A BUCKET
John DiFede, 24878 Tioga Rd., Hayward, Calif. 94544
Filed Jan. 13, 1983, Ser. No. 457,565
Term of patent 14 years
U.S. Cl. D34—23



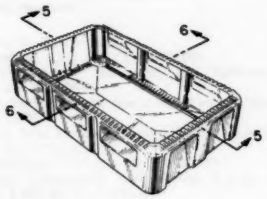
281,365
BABY SEAT ATTACHMENT FOR SHOPPING CARTS
Donald Gugler, 10208 Swinton Ave., Granada Hills, Calif. 91343
Filed Jun. 7, 1983, Ser. No. 501,849
Term of patent 14 years
U.S. Cl. D34—27



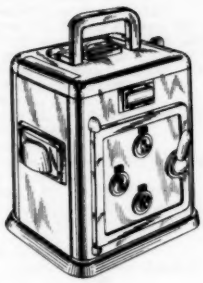
281,366
PALLET
Allan Hakanen, Turku, Finland, assignor to Treston Oy, Turku, Finland
Filed Apr. 18, 1983, Ser. No. 486,029
Claims priority, application Finland, Nov. 16, 1982, 998/82
Term of patent 14 years
U.S. Cl. D34—38



281,367
COMBINED PACKING AND STORING BOX FOR FISH
Per S. Stromberg, P.O. Box 65, N-2011 Strommen, Norway
Filed Sep. 15, 1982, Ser. No. 418,482
Claims priority, application Norway, Mar. 17, 1982, 62.754
Term of patent 14 years
U.S. Cl. D34—40



281,368
TOY SAFE
Pietro Catelli, Como, Italy, assignor to Artsana S.p.A., Italy
Filed Jul. 28, 1983, Ser. No. 518,150
Claims priority, application Italy,
Term of patent 14 years
U.S. Cl. D99—35



281,369
PAPER MONEY HOLDER
Joseph H. Harris, 1149 Gail La., Sleepy Hollow, Ill. 60118
Filed Dec. 27, 1982, Ser. No. 441,043
Term of patent 14 years
U.S. Cl. D99—34

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Laitinen, Sakari; and Nyman, Tapani, 4,552,619, Cl. 162-336.000.

A.B.F. Industrie S.A.: *See*—
Puyo, Philippe; and Bouvet, Lucien, 4,551,921, Cl. 33-366.000.

A. Nattermann & Cie GmbH: *See*—
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Aab, Hans-Walter: *See*—
Lehmann, Wolfgang; and Aab, Hans-Walter, 4,552,416, Cl. 308-6.00C.

Aavid Engineering, Inc.: *See*—
Johnson, Philip A.; and McCarthy, Alfred F., 4,552,206, Cl. 165-80.300.

Abe, Hiroo: *See*—
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.

Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, to Nippon Soken, Inc. Piezoelectric actuator and a piezoelectric pump injector incorporating the same. 4,553,059, Cl. 310-328.000.

Abe, Yasuhiro: *See*—
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.

Abe, Yoshiaki; and Koyama, Masaaki. Multi-layer coating method based on differential spectral reflectance. 4,552,780, Cl. 427-8.000.

Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and by Lavery, Ormond F., personal representative, to Megabar Explosives Corporation. Soft composite explosives and process for making same. 4,552,597, Cl. 149-2.000.

Abendroth, Werner: *See*—
Urbye, Klaus; and Abendroth, Werner, 4,552,623, Cl. 202-248.000.

Abrams, Wayne A.: *See*—
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Acampora, Alfonse, to RCA Corporation. Circuitry for correcting motion induced errors in frame comb filtered video signals. 4,553,158, Cl. 358-31.000.

ACF Industries, Inc.: *See*—
Doerr, Richard D.; Muller, J. Joseph; and Green, William A., 4,553,076, Cl. 318-282.000.

Adachi, Masakazu. *See*—
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.

Adachi, Tokio: *See*—
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Adamek, Frank C.: *See*—
Stewart, Vernon G.; and Adamek, Frank C., 4,552,369, Cl. 277-226.000.

Adams, Gary E.; Casper, John M.; and Gritter, Roy J., to International Business Machines Corporation. LC/FTIR System with thermospray solvent separation. 4,552,723, Cl. 422-66.000.

Adams, Richard J., to Beloit Corporation. Paper machine belt. 4,552,620, Cl. 162-358.000.

Adcock, Carson D.; and Lauter, Robert, to W. W. Adcock, Inc. Spa with recessed filter chamber. 4,552,658, Cl. 210-169.000.

Addleman, Robert L., to Imperial Chemical Industries Limited. Energy beam focusing apparatus and method. 4,553,017, Cl. 219-121.0LA.

Adi Dassler KG: *See*—
Bente, Alfred, 4,551,931, Cl. 36-117.000.

Adolph Coors Company: *See*—
Bader, James S., 4,552,265, Cl. 206-159.000.

Advanced Energy Concepts '81 Ltd.: *See*—
Distin, Robert G., Jr.; and Lang, Thomas J., 4,552,037, Cl. 74-805.000.

Advanced Medical Products, Inc.: *See*—
Ruscigno, Harry G., 4,552,132, Cl. 128-38.000.

Advanced Micro Devices, Inc.: *See*—
Yang, Tsen-Shau, 4,553,083, Cl. 323-313.000.

Advanced Technology Laboratories, Inc.: *See*—
Frey, Gregg W., 4,552,607, Cl. 156-330.000.

Agatahama, Shunichi, to Omron Tateisi Electronics Co. Polarized electromagnetic device. 4,553,118, Cl. 335-79.000.

Air Preheater Company, Inc., The: *See*—
Bellows, Kenneth O., 4,552,204, Cl. 165-10.000.

Air Products and Chemicals, Inc.: *See*—
Bauman, Bernard D., 4,552,847, Cl. 136-5.000.
Goar, B. Gene, 4,552,747, Cl. 423-574.00R.
Spector, Marshall L.; and Hong, Sun-Nan, 4,552,663, Cl. 210-605.000.

Airwick Industries, Inc.: *See*—
Dente, Stephen V.; and Ward, Kenneth J., 4,552,777, Cl. 427-393.100.

Aisin Seiki Kabushiki Kaisha: *See*—
Akagi, Motonobu, 4,552,249, Cl. 185-39.000.
Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, 4,552,413, Cl. 303-106.000.
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,209, Cl. 364-431.070.
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.
Iwasaki, Shinichiro, 4,553,058, Cl. 310-268.000.
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.

Aizawa, Michihiko: *See*—
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, 4,551,991, Cl. 62-476.000.

Akabane, Yukihiro: *See*—
Takei, Kenji; and Akabane, Yukihiro, 4,552,467, Cl. 384-615.000.

Akagi, Motonobu, to Aisin Seiki Kabushiki Kaisha. Mounting device for spiral spring. 4,552,249, Cl. 185-39.000.

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Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., to Iolab Corporation. Method and apparatus for dissipating static charge from an abrasive tumbling operation. 4,551,949, Cl. 51-164.100.

Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Distributed feedback semiconductor laser. 4,553,239, Cl. 372-50.000.

Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Engine control event timing employing both crank angle rotation and time measurements. 4,553,208, Cl. 364-431.050.

Akzona Incorporated: *See*—
Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., 4,552,603, Cl. 156-167.000.

Alan Shelton Limited: *See*—
Shelton, William E. A., 4,551,927, Cl. 34-82.000.

Alarm Accessory Ltd.: *See*—
Holt, William, 4,553,134, Cl. 340-545.000.

Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., to Dow Chemical Company, The. Polyamide-polyurea polymers by the RIM process. 4,552,945, Cl. 528-62.000.

Albert-Frankenthal AG: *See*—
Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, 4,552,068, Cl. 101-415.100.

Albertson, Clarence E., to Borg-Warner Corporation. Resin-reinforced, nodular plated wet friction materials. 4,552,259, Cl. 192-107.00M.

Aldwinckle, Michael J., to Ciba Geigy Corporation. Use of N-acyl sarcosinate and its salts as compatibility agents for pesticide/liquid fertilizer formulations. 4,552,580, Cl. 71-3.000.

Alexander, William H.; and Dare, Roy R., to Vapor Corporation. Ball valve. 4,552,335, Cl. 251-315.000.

Alfa-Laval AB: *See*—
Baeling, Peter; and Ehnstrom, Lars, 4,552,775, Cl. 426-624.000.

Alfenaar, Marinus: *See*—
van den Brink, Franciscus; and Alfenaar, Marinus, 4,552,636, Cl. 204-182.400.

Allcroft, Arthur N.: *See*—
Jensen, Ronald P.; and Allcroft, Arthur N., 4,552,146, Cl. 128-305.000.

Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, to Commissariat a l'Energie Atomique. Optical fibers with plastic core and polymer cladding. 4,552,431, Cl. 350-96.340.

Allen-Bradley Company: *See*—
Burns, James A.; and Nolan, Dennis C., 4,553,187, Cl. 361-96.000.
Cannon, Lee E.; Schmitt, Peter C.; and Cheever, Dan R., 4,553,080, Cl. 318-696.000.
Struger, Odo J.; and Sammons, Barry E., 4,553,224, Cl. 364-900.000.

Alley, Gary D.: *See*—
Clifton, Brian J.; and Alley, Gary D., 4,553,265, Cl. 455-325.000.

Allied Corporation: *See*—
Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., 4,553,136, Cl. 340-572.000.
Casey, Gary L., 4,552,311, Cl. 239-585.000.
Jenczewski, Theodore J.; and Skinner, William H., Jr., 4,552,635, Cl. 204-182.400.
Narayan, Surendra D.; and Thomas, Rudy V., 4,551,889, Cl. 24-196.000.

Allis-Chalmers Corporation: *See*—
Wooldridge, James E., 4,552,058, Cl. 98-1.500.

Allor, Richard L.: *See—*
Baker, Robert R.; and Allor, Richard L., 4,552,024, Cl. 73-821.000.
Almond, Stephen W.; and Himes, Ronald E., to Halliburton Company. Method of gravel packing a well. 4,552,215, Cl. 166-278.000.
Alsthom-Atlantique: *See—*
Thuries, Edmond, 4,553,004, Cl. 200-148.00A.
Alten, Kurt. Ramp bridging device. 4,551,877, Cl. 14-71.700.
Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., to Dragerwerk Aktiengesellschaft. Narcotics evaporator having a monitor equipped by-pass. 4,552,139, Cl. 128-200.140.
Aluminum Company of America: *See—*
Anderson, Albert R., 4,552,465, Cl. 374-179.000.
Voegel, Robert L.; and Wright, Kenton B., 4,552,638, Cl. 204-286.000.
Alyfuku, Kiyoshi: *See—*
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.
ALZA Corporation: *See—*
Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,552,561, Cl. 604-896.000.
Theeuwes, Felix, 4,552,555, Cl. 604-56.000.
Urquhart, John; and Theeuwes, Felix, 4,552,556, Cl. 604-80.000.
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, to SGS-ATES Componenti Elettronici SpA. Monolithically integratable bistable multivibrator circuit having at least one output that can be placed in a preferential state. 4,553,046, Cl. 307-289.000.
Amax, Inc.: *See—*
Duyvesteyn, Willem P. C.; and Hogsett, Robert F., 4,552,629, Cl. 204-55.00R.
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.
Amboss, Kurt, to Hughes Aircraft Company. Dual-mode electron gun with improved shadow grid arrangement. 4,553,064, Cl. 313-448.000.
AMCA International Corporation: *See—*
Wallace, Gary L.; and Kasper, Frank S., 4,552,048, Cl. 83-23.000.
Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., to International Business Machines Corporation. Process for forming a high density metallurgy system on a substrate and structure thereof. 4,552,615, Cl. 158-659.100.
Amer, James E.: *See—*
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., 4,552,295, Cl. 226-195.000.
American Can Company: *See—*
Krueger, Duane A.; and Odorzynski, Thomas W., 4,552,714, Cl. 264-171.000.
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,552,801, Cl. 428-220.000.
American Colloid Company: *See—*
Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, 4,552,938, Cl. 526-240.000.
American Cyanamid Company: *See—*
Asato, Goro; and Ross, Lawrence J., 4,552,897, Cl. 514-554.000.
Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., 4,552,148, Cl. 128-334.00C.
Hill, John H.; and Lisboa, Luis S., 4,552,161, Cl. 132-88.500.
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.
American Filtrona Corporation: *See—*
Berger, Richard M., 4,552,158, Cl. 131-94.000.
American Maise-Products Company: *See—*
DeBoer, Edward D.; and Yahl, Kenneth R., 4,552,564, Cl. 8-115.600.
American Robot Corporation: *See—*
Gorman, Robert H., 4,552,505, Cl. 414-735.000.
American Standard Inc.: *See—*
Balukin, Richard F.; and Reiss, John R., 4,552,412, Cl. 303-67.000.
Utter, Robert E., 4,552,518, Cl. 418-55.000.
American Sterilizer Company: *See—*
Baker, Richard E., Sr.; and Baker, Richard E., Jr., 4,552,720, Cl. 422-26.000.
AMF Incorporated: *See—*
Brutsman, James W., 4,552,061, Cl. 100-53.000.
Amhil Enterprises Ltd.: *See—*
Van Melle, Hugh, 4,552,522, Cl. 425-182.000.
Amick, David R., to Rohm and Haas Company. Microbiocidal article for aqueous systems. 4,552,752, Cl. 424-21.000.
AMP Incorporated: *See—*
Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., 4,552,422, Cl. 339-17.0CF.
Billman, Timothy B., 4,552,425, Cl. 339-47.00R.
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
English, James M.; Gurreri, Nicholas L.; and Kling, John P., 4,553,114, Cl. 333-182.000.
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.
Swengel, Robert C., Jr., 4,552,423, Cl. 339-19.000.
Teagno, Vladimiro; and Chiusa, Alessandro, 4,552,260, Cl. 198-345.000.
van Alst, Gerardus M., 4,552,429, Cl. 339-99.00R.
Ampex Corporation: *See—*
Poole, Burnet M., 4,553,185, Cl. 360-10.100.
AMSTED Industries Incorporated: *See—*
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.
Peting, Robert G., 4,552,385, Cl. 285-111.000.
Analgesic Associates: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,552,899, Cl. 514-568.000.
Anastasi, Kenneth J.: *See—*
Dombrowski, David M.; and Anastasi, Kenneth J., 4,552,046, Cl. 82-36.00A.
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, to Koh-I-Noor Rapidograph, Inc. Device for covering an oblong opening in a housing. 4,552,483, Cl. 403-288.000.
Andersen, Einar; and Boe, Gunnar H., to Elkem a/s. Hydrometallurgical method of extraction of copper from sulphide-containing material. 4,552,632, Cl. 204-107.000.
Anderson, Albert R., to Aluminum Company of America. Two-point spring loaded thermocouple probe with replaceable tips. 4,552,465, Cl. 374-179.000.
Anderson, Alex L. Electrical discharge surface conditioning device. 4,553,012, Cl. 219-69.00R.
Anderson, Edwin A.; and Webb, Derrel D. Drill string shock absorber. 4,552,230, Cl. 175-321.000.
Anderson, Gene S.; and Watson, David B., to Cooper Industries, Inc. Hybrid cable. 4,552,432, Cl. 350-96.230.
Anderson, Lowell M.; and Volk, Rodney H., to Westinghouse Electric Corp. Transport refrigeration unit. 4,551,986, Cl. 62-239.000.
Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., to Allied Corporation. Amorphous antipilferage marker. 4,553,136, Cl. 340-572.000.
Anderson, William T., to AT&T Bell Laboratories. Optical fiber fabrication process comprising determining mode field radius and cut-off wavelength of single mode optical fibers. 4,552,578, Cl. 65-29.000.
Ando, Masamoto: *See—*
Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, 4,552,413, Cl. 303-106.000.
Ando, Osamu: *See—*
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, 4,552,199, Cl. 164-423.000.
Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Process for producing a molded skin product. 4,552,715, Cl. 264-309.000.
Andres, Rudolf: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, 4,552,402, Cl. 297-284.000.
Andrew Corporation: *See—*
Saad, Saad S.; and Knop, Charles M., 4,553,112, Cl. 333-21.00R.
Annas, Dulin L., to Anteg, Inc. Time delay switch. 4,552,999, Cl. 200-34.000.
ANT Nachrichtentechnik GmbH: *See—*
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.
Anteg, Inc.: *See—*
Annas, Dulin L., 4,552,999, Cl. 200-34.000.
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, to Reanal Finomvegyszergyar. Gonadoliberin derivatives process for the preparation and pharmaceutical compositions thereof. 4,552,864, Cl. 514-15.000.
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic camera. 4,553,170, Cl. 358-225.000.
Aoki, Kozo: *See—*
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.
Aoyagi, Shigeyuki; and Watanabe, Mamoru, to Victor Company of Japan, Limited. Apparatus for storing information storage mediums into casings. 4,551,966, Cl. 53-571.000.
Appleton, Arthur I., to Appleton Electric Company. Plug and receptacle with separable switch contactors. 4,553,000, Cl. 200-50.00B.
Appleton Electric Company: *See—*
Appleton, Arthur I., 4,553,000, Cl. 200-50.00B.
Appleton Papers Inc.: *See—*
Brown, Robert W.; and Bowman, Richard P., 4,552,811, Cl. 428-402.210.
Aquafine Corporation: *See—*
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.
Arai, Fuminao: *See—*
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, to Sumitomo Chemical Company, Limited. Chiral copper complex. 4,552,972, Cl. 556-35.000.
Ardal og Sunndal Verk a.s.: *See—*
Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, 4,552,530, Cl. 432-192.000.
Arikawa, Junichi: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.
Arlowe, H. Duane, to United States of America, Energy. Capacitive label reader. 4,553,026, Cl. 235-451.000.

Armas & Harshbarger Manufacturing Co.: *See*—
Armas, Joe, 4,552,193, Cl. 144-144.500.
Armas, Joe, to Armas & Harshbarger Manufacturing Co. Panelled door frame shaper template. 4,552,193, Cl. 144-144.500.
Armstrong World Industries, Inc.: *See*—
Colyer, Timothy D.; and Sensenig, Darryl L., 4,552,606, Cl. 156-280.000.
Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, to Hoechst Aktiengesellschaft. Solvated salts of dinitrophenylcyanamides, and a process for the preparation thereof. 4,552,970, Cl. 548-543.000.
Asada, Masahiro: *See*—
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Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Fukuoka, Shinsuke; and Watanabe, Tomonari, 4,552,974, Cl. 560-25.000.
Murakami, Akira; and Yoshizaki, Hideo, 4,552,760, Cl. 424-94.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.
Wakamiya, Shunichiro, 4,553,229, Cl. 369-110.000.
Asai, Kiyotsugu: *See*—
Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, 4,552,944, Cl. 528-55.000.
Asai, Takamitsu: *See*—
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Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.
Asato, Goro; and Ross, Lawrence J., to American Cyanamid Company. Salts of 1-(aminodihalophenyl)-2-aminoethanols and antilipogenic compositions prepared therefrom. 4,552,897, Cl. 514-554.000.
ASEA Aktiebolag: *See*—
Brantmark, Hakan; and Ennerfelt, Johan, 4,553,077, Cl. 318-568.000.
Persson, Bo G.; and Spicar, Erich, 4,552,990, Cl. 174-117.0FF.
Ashland Oil, Inc.: *See*—
Hettinger, William P., Jr., 4,552,642, Cl. 208-10.000.
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,552,647, Cl. 208-120.000.
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.
Astrolab Inc.: *See*—
Dery, Normand; and Boudreau, Jean-Louis, 4,552,611, Cl. 156-391.000.
AT&T Bell Laboratories: *See*—
Anderson, William T., 4,552,578, Cl. 65-29.000.
Chen, Chung Y.; and Cho, Alfred Y., 4,553,155, Cl. 357-30.000.
AT&T Technologies, Inc.: *See*—
Wong, Ching-Ping, 4,552,818, Cl. 428-447.000.
Atarashi, Kazuya, to Honda Giken Kogyo Kabushiki Kaisha. Glove box on vehicular instrument panel. 4,552,399, Cl. 296-37.120.
Atasi Corporation: *See*—
Brown, Stanley F.; and Plonczak, Garold W., 4,553,183, Cl. 360-98.000.
Atlantic Richfield Company: *See*—
Kolecki, Ronald E., 4,552,003, Cl. 72-38.000.
Wakefield, G. Felix; and Bender, David L., 4,552,289, Cl. 222-600.000.
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Atochem: *See*—
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.
Atomic Energy of Canada Limited: *See*—
Chuang, Karl T.; and Thatcher, David R. P., 4,552,744, Cl. 423-522.000.
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, to Hitachi, Ltd. Refrigeration apparatus. 4,551,983, Cl. 62-174.000.
Attia, Yosry A.; and Fuerstenau, Douglas W., to University of California, The Regents of the. Method for removing inorganic sulfides from non-sulfide minerals. 4,552,652, Cl. 209-5.000.
Aubrey, David R.; and Kearley, Stephen J., to Electricity Council, The. Sectionalizer. 4,553,188, Cl. 361-115.000.
Audeh, Costandi A., to Mobil Oil Corporation. Apparatus for co-processing of oil and coal. 4,552,725, Cl. 422-140.000.
Auer, Hugo, to Robert Bosch GmbH. Apparatus for producing pouch packages in pairs. 4,552,613, Cl. 156-515.000.
Auernhammer, Erich, to Siemens Aktiengesellschaft. Cooling arrangement for an enclosed electric machine. 4,553,055, Cl. 310-62.000.
Aufderhaar, Herbert, to C. Keller GmbH u. Co. KG Maschinenfabrik. Nozzle box for heat treatment of veneering. 4,551,926, Cl. 34-23.000.
Auphan, Michel J., to U.S. Philips Corporation. Apparatus for the scanning of objects by means of ultrasound echography. 4,552,020, Cl. 73-602.000.
Austria Metall Aktiengesellschaft: *See*—
Eder, Theodor; and Koser, Jaroslav, 4,552,085, Cl. 114-84.000.
Automotive Products plc: *See*—
Nix, Richard; and Leigh-Monstevens, Keith V., 4,551,976, Cl. 60-533.000.
Avon Products, Inc.: *See*—
Hussain, Zahera J.; and Zukoski, Ronald D., 4,552,693, Cl. 252-522.00A.
Axford, Theodore G.: *See*—
Sheldon, William W.; and Axford, Theodore G., 4,551,938, Cl. 43-4.500.
Axford, Wayne L. Guttering system. 4,551,956, Cl. 52-12.000.
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, to Nihon Tokushu Noyaku Seizo K.K. Certain 2-pyridyloxyacetanilides and their use as herbicides. 4,552,586, Cl. 71-94.000.
B. F. Goodrich Company, The: *See*—
Landsness, Clifford A., 4,552,602, Cl. 156-157.000.
Schollenberger, Charles S., 4,552,932, Cl. 525-440.000.
B & H Manufacturing Company: *See*—
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Babcock Textilmaschinen GmbH: *See*—
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Babcock & Wilcox Company, The: *See*—
Berneburg, Philip L.; and Krukonis, Val J., 4,552,786, Cl. 427-249.000.
Knudsen, James K.; and Keyes, Marion A., IV, 4,552,026, Cl. 73-861.240.
Babuder, Gerald A.; and Weigl, Jeffrey L., to Cajon Company. Fluid coupling. 4,552,389, Cl. 285-379.000.
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., to International Business Machines Corporation. High density planar interconnected integrated circuit package. 4,553,192, Cl. 361-395.000.
Bach, Eric; and Schmidt, Dieter, to Siemens Aktiengesellschaft. X-Ray diagnostic system comprising at least one x-ray generator and x-ray apparatus. 4,553,254, Cl. 378-098.000.
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Display panel for vending machines. 4,551,935, Cl. 40-584.000.
Bader, James S., to Adolph Coors Company. Can clip and multiple container package. 4,552,265, Cl. 206-159.000.
Baeling, Peter; and Ehnstrom, Lars, to Alfa-Laval AB; and Svenska Lantmannens Riksforbund, Forening u.p.a, by said Lars Ehnstrom. Process for the production of animal feed stuff from a liquid residue obtained by fermentation and distillation of grain raw material. 4,552,775, Cl. 426-624.000.
Bagalini, Dante, to Westinghouse Electric Corp. Molded case circuit breaker with resettable combined undervoltage and manual trip mechanism. 4,553,116, Cl. 335-20.000.
Baik, Sunggi: *See*—
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Bailey, Nathan M. Portable floating fishing light. 4,553,194, Cl. 362-267.000.
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Baker Oil Tools, Inc.: *See*—
Ross, Richard J.; and Speller, David J., 4,552,218, Cl. 166-319.000.
Baker, Richard E., Jr.: *See*—
Baker, Richard E., Sr.; and Baker, Richard E., Jr., 4,552,720, Cl. 422-26.000.
Baker, Richard E., Sr.; and Baker, Richard E., Jr., to American Sterilizer Company. Debris compressing autoclave. 4,552,720, Cl. 422-26.000.
Baker, Robert G.: *See*—
Jameson, Calvin R.; and Baker, Robert G., 4,553,023, Cl. 219-301.000.
Baker, Robert R.; and Allor, Richard L., to Ford Motor Company. Device for directly analyzing strength of ceramic tool bits. 4,552,024, Cl. 73-821.000.
Bakhshi, Virendar S.: *See*—
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Ball Corporation: *See*—
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Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.
Ballard, Philip M.: *See*—
Bates, Robert N.; and Ballard, Philip M., 4,553,266, Cl. 455-327.000.
Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, to Centre National de la Recherche Scientifique. Curved gas-filled detector with avalanche of electrons, and strip. 4,553,062, Cl. 313-93.000.
Baltare, Gunnar, to Eaton Corporation. Drum brake spider assembly with cantilever anchor pin. 4,552,254, Cl. 188-328.000.
Baltz, Gene F.; and Jourdan, Donovan K., to Outboard Marine Corporation. Manual starter with ignition spark retard. 4,552,103, Cl. 123-186.000.
Balukin, Richard F.; and Reiss, John R., to American Standard Inc. Brake pipe charging cut-off arrangement. 4,552,412, Cl. 303-67.000.
Band, Elliot I.; and Breen, Michael J., to Stauffer Chemical Company. Olefin polymerization catalyst and process. 4,552,859, Cl. 502-127.000.
Banerjee, Ratan, to BOC Group, Inc., The. Heat exchange methods and apparatus. 4,551,981, Cl. 62-70.000.
Bang, Hyo J. Oil filter wrench. 4,552,040, Cl. 81-65.000.
Bar-Nefy, Simcha; and Tiomkin, Michael V., to Israel Aircraft Industries, Ltd. Minefield clearing apparatus. 4,552,053, Cl. 89-1.130.
Baranyi, Guiseppa: *See*—
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., 4,552,822, Cl. 430-59.000.
Barbagli, Rino O., to Fiatallis Europe S.p.A. Device for controlling the travel of a vehicle. 4,552,031, Cl. 74-473.00R.

Barbee, Robert B.; and Wicker, Thomas H., Jr., to Eastman Kodak Company. Polyester resins capable of forming containers having improved gas barrier properties. 4,552,948, Cl. 528-194.000.

Bare, Thomas M., to ICI Americas Inc. Pyrazolo[3,4-b]pyridine carboxylic acid esters and their pharmaceutical use. 4,552,883, Cl. 514-303.000.

Barfield, Gilbert; and Hagopian, Gary J. Apparatus for forming golf ball molds. 4,552,004, Cl. 72-60.000.

Barker, Robert I.; King, David P.; and Pawlowski, Henry A., to Monsanto Company. Multifunction processability testing method and apparatus. 4,552,025, Cl. 73-846.000.

Baron, Raphael: *See*—
Borodulin, German; Shkolnik, Alexander; and Baron, Raphael, 4,552,125, Cl. 126-437.000.

Baron, Walter J.; and Cleaver, Laird C., to Water Services of America, Inc. Basket retainer for heat exchanger tube cleaning element. 4,552,207, Cl. 165-95.000.

Barozzi, Gian P.: *See*—
Horeschi, Giancarlo; and Barozzi, Gian P., 4,552,474, Cl. 400-310.000.

Barrow, Michael, to Burroughs Corporation. Printed circuit board maximizing areas for component utilization. 4,553,111, Cl. 333-1.000.

Barsteika, Paul V.: *See*—
Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., 4,551,989, Cl. 62-468.000.

Barteldes, W. Christopher: *See*—
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Barton, Russell L.: *See*—
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.
Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., 4,552,895, Cl. 514-470.000.

BASF Aktiengesellschaft: *See*—
Merger, Franz; Hettinger, Peter; and Lange, Arno, 4,552,985, Cl. 568-497.000.
Ostertag, Werner, 4,552,593, Cl. 106-291.000.

Bass, Eric. Swimming pool exercise device. 4,552,540, Cl. 441-129.000.

Bates, Robert N.; and Ballard, Philip M., to U.S. Philips Corporation. R.F. Circuit arrangement. 4,553,266, Cl. 455-327.000.

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Cyriax, Wilhelm, 4,552,384, Cl. 285-111.000.

Batterman, Eric P., to RCA Corporation. Signal transition enhancement circuit. 4,553,042, Cl. 307-263.000.

Bauld, Nathan L.; and Bellville, Dennis J., to Board of Regents, The University of Texas System. Di- and triphenylated cation radical polymers and their use as Diels-Alder catalysts. 4,552,928, Cl. 525-326.200.

Bauman, Bernard D., to Air Products and Chemicals, Inc. Visual quality control method for barrier treated containers. 4,552,847, Cl. 136-5.000.

Bauman, Therese M.; and Lee, Chi-Long, to Dow Corning Corporation. Nonslumping, foamable polyorganosiloxane compositions containing organosiloxane graft copolymers. 4,552,901, Cl. 521-122.000.

Baumann, Horst: *See*—
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Baumeister, Hans-Peter, to Eastman Kodak Company. Method/apparatus for playback of color video still pictures from a magnetic disk. 4,553,175, Cl. 358-310.000.

Baumgartner, Kenneth A. Set of workpiece stops for workpiece clamping collet. 4,552,370, Cl. 279-1.00S.

Baxter Travenol Laboratories, Inc.: *See*—
Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., 4,552,721, Cl. 422-28.000.

Bayer Aktiengesellschaft: *See*—
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.
Feldner, Kurt; and Grape, Wolfgang, 4,552,973, Cl. 556-469.000.
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., 4,552,954, Cl. 536-24.000.
Podszun, Wolfgang; Bley, Fritjof; and Walkowiak, Michael, 4,552,906, Cl. 523-115.000.
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.

Bayer, Bryce E., to Eastman Kodak Company. Transform processing method for reducing noise in an image. 4,553,165, Cl. 358-167.000.

Bayerische Motoren Werke AG: *See*—
Schausberger, Christoph, 4,552,108, Cl. 123-270.000.

Bayssat, Michel: *See*—
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

BBC Brown, Boveri & Company, Limited: *See*—
Hartmann, Peter, 4,553,251, Cl. 375-114.000.
Stemmler, Herbert, 4,553,197, Cl. 363-37.000.

Beacham, Harry H.; and Mucenieks, Paul R., to FMC Corporation. Electrically conductive plastics and production of same. 4,552,687, Cl. 252-500.000.

Beaupre, Jean. Synthesis color photographic map and method of making same. 4,552,444, Cl. 354-354.000.

Bechtel International Corporation: *See*—
Galstaun, Lionel S., 4,552,572, Cl. 55-36.000.
Wallace, Norman R., 4,552,460, Cl. 366-196.000.

Beck, Hubert W.: *See*—
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,552,647, Cl. 208-120.000.

Becker, Benedikt: *See*—
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.

Beckett, Donald E., to Beckett Packaging Limited. Demetallizing method and apparatus. 4,552,614, Cl. 156-640.000.

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Beckman, John A.; and Sills, David E., to Dana Corporation. Drive line slip joint assembly. 4,552,544, Cl. 464-162.000.

Beebe International, Inc.: *See*—
Smith, Glenn S., 4,552,073, Cl. 105-154.000.

Beecher, William H., to Illinois Tool Works Inc. Bag shut-off clamp. 4,551,888, Cl. 24-30.50P.

Behn, Ernest E.; and Behn, Jerome L. Cultivator shield attachment. 4,552,225, Cl. 172-513.000.

Behn, Jerome L.: *See*—
Behn, Ernest E.; and Behn, Jerome L., 4,552,225, Cl. 172-513.000.

Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, to Olympia Werke AG. Optical printer for line-by-line image forming. 4,553,148, Cl. 346-107.00R.

Behrens, Thomas: *See*—
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Beiersdorf Aktiengesellschaft: *See*—
Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, 4,552,138, Cl. 128-156.000.

Beitler, Uzi: *See*—
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Belanger, Inc.: *See*—
Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., 4,552,297, Cl. 227-120.000.

Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., to Belanger, Inc. Rotatable reloading apparatus for a stapler. 4,552,297, Cl. 227-120.000.

Bell, Jackie D.: *See*—
Fabbri, Vittorio E.; and Bell, Jackie D., 4,552,159, Cl. 132-9.000.

Bell, William D.: *See*—
Patel, Shantilal G.; and Bell, William D., 4,551,892, Cl. 28-166.000.

Bellows, Kenneth O., to Air Preheater Company, Inc., The. Means for lifting heating element baskets. 4,552,204, Cl. 165-10.000.

Bellville, Dennis J.: *See*—
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Beloit Corporation: *See*—
Adams, Richard J., 4,552,620, Cl. 162-358.000.
Beucker, Albert W., 4,551,894, Cl. 29-130.000.

Belorussky Politekhnichesky Institut: *See*—
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.

Belt, Ronald A.; and Joseph, James D., to Honeywell Inc. Means and method of processing optical image edge data. 4,553,260, Cl. 382-22.000.

Bencuya, Izak: *See*—
Cogan, Adrian I.; and Bencuya, Izak, 4,551,909, Cl. 29-571.000.

Benda, Steven J.; Kivisto, George M.; and Kivisto, Paul M. Clamp mechanism. 4,552,345, Cl. 269-43.000.

Bender, David L.: *See*—
Wakefield, G. Felix; and Bender, David L., 4,552,289, Cl. 222-600.000.

Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., to GTE Communications Products Corporation. Laser beam energy profile synthesizer. 4,553,244, Cl. 372-95.000.

Benford, Harry: *See*—
Hoffman, Allan; and Benford, Harry, 4,552,142, Cl. 128-207.160.

Benjamin, James A.: *See*—
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,553,151, Cl. 357-23.400.

Benner, Philip E. Method and apparatus for removing ions from a liquid. 4,552,664, Cl. 210-695.000.

Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., to AMP Incorporated. Modular receptacle pin grid array. 4,552,422, Cl. 339-17.0CF.

Bente, Alfred, to Adi Dassler KG. Sole for a cross-country ski boot and associated binding base plate. 4,551,931, Cl. 36-117.000.

Berchtold, Nikolaus, to Maag Gear-Wheel & Machine Company Limited. Tooth flank profile measuring apparatus containing a feeler for determining the surface roughness of a tooth flank. 4,552,014, Cl. 73-105.000.

Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., to TRW Inc. Opposed gate-source transistor. 4,551,904, Cl. 29-571.000.

Berg, Gilbert G.: *See*—
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.

Berger, Richard M., to American Filtrona Corporation. Free air dilution smoke filter and method and apparatus for fabricating same. 4,552,158, Cl. 131-94.000.

Berglin, Carl T.; and Herrmann, Wolfgang, to EKA AB. Method in the production of hydrogen peroxide. 4,552,748, Cl. 423-588.000.

Berliner Elektronenspeicherring Gesellschaft: *See*—
Petersen, Helmuth, 4,553,253, Cl. 378-084.000.

Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, to Albert-Frankenthal AG. Gravure cylinder. 4,552,068, Cl. 101-415.100.

Berneburg, Philip L.; and Krukonis, Val J., to Babcock & Wilcox Company, The. Method for densification of ceramic materials. 4,552,786, Cl. 427-249.000.

Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, to Elesa S.p.A. Tipping handle for control handwheels. 4,552,034, Cl. 74-547.000.

Berti, Eugenio, to Memorex Corporation. Disk drive positioning system providing fault-free protection against endstop head crashes by use of a passive network in the actuator driving signal path. 4,553,181, Cl. 360-75.000.

Bertsch, Gotthilf; and Braun, Josef, to Maschinenfabrik Sulzer-Ruti AG. Weaving machine. 4,552,187, Cl. 139-434.000.

Bethlehem Steel Corporation: *See—*
Nace, Robert J., 4,551,951, Cl. 51-170.0EB.

Bettencourt, George S.; and Strickler, Robert E., to Westinghouse Electric Corp. Multiple connector hood for interconnections to printed circuit boards. 4,552,426, Cl. 339-75.00M.

Betzing, Hans: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Beucker, Albert W., to Beloit Corporation. Urethane covered paper machine roll with vented interface between roll and cover. 4,551,894, Cl. 29-130.000.

Bewley, Jesse R.: *See—*
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Beymer, Dale A. Tightening apparatus. 4,552,042, Cl. 81-476.000.

Biancalana, Carlo; Vescovi, Giuseppe; and Volpini, Maurizio, to Bitiess Microtecnica S.A. Cleaning device for dental instruments to be used during surgery and dental treatments. 4,552,163, Cl. 134-100.000.

Biehle, William C., to Metal Improvement Company, Inc. Apparatus for measuring flow-rate of electromagnetic granular media. 4,552,017, Cl. 73-198.000.

Bilco Tools, Inc.: *See—*
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Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, to McCorquodale Machine Systems Limited. Printing in register on sheets. 4,552,065, Cl. 101-93.330.

Billman, Timothy B., to AMP Incorporated. High current connector. 4,552,425, Cl. 339-47.00R.

Binard, Luc Andre M. G., to Studiecentrum voor Kernenergie, S.C.K. Equipment for determining the position of a metal body in a medium with low electric conductivity. 4,552,134, Cl. 128-1.500.

Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., to Thermo Electron Corporation. Gas-fired steam cooker. 4,552,123, Cl. 126-369.000.

Bisiach, Luciano. Automatic tool changing mechanism for industrial robots. 4,551,903, Cl. 29-568.000.

Bisonaya, Rudy Y.: *See—*
Farrell, Gerald J.; and Bisonaya, Rudy Y., 4,552,171, Cl. 137-359.000.

Bissot, Thomas C.; and Li, Stephen, to Du Pont de Nemours, E. I., and Company. Reinforced membrane, electrochemical cell and electrolysis process. 4,552,631, Cl. 204-98.000.

Bitiess Microtecnica S.A.: *See—*
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Bittner, Harry J., to National Semiconductor Corporation. Integrated circuit output driver stage. 4,553,044, Cl. 307-270.000.

Black & Decker Inc.: *See—*
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,552,477, Cl. 401-188.00R.
Saeed, Abdul, 4,553,057, Cl. 310-242.000.

Black, Donald J.; and Tang, Robert H., to PPG Industries, Inc. Peroxide composition containing phenolic antioxidant. 4,552,682, Cl. 252-186.260.

Blackmore, Phillip W.: *See—*
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Blagg, Bobby W.; and Gulliver, Richard F., to Gulf States Paper Corporation. Container blank having relieved edge construction. 4,552,293, Cl. 229-1.50B.

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Blasch, Earl; and Smith-Johannsen, Robert, to Blasch Precision Ceramics, Inc. Composite inorganic structures. 4,552,800, Cl. 428-212.000.

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Bloch, Peter; and Wydler, Robert, to Maag Gear-Wheel & Machine Company Limited. Method for controlling a grinding stroke in a gear tooth flank grinding machine. 4,551,954, Cl. 51-287.000.

Bluegrass Electronics Inc.: *See—*
DuRand, Elden E., III, 4,552,022, Cl. 73-647.000.

Bluett, Thomas J. Environmental impervious swivel. 4,552,481, Cl. 403-165.000.

Blume, Friedrich; and Voigtmann, Lutz, to Braun Aktiengesellschaft. Shear foil having protrusions on its skin-contacting surface thereof. 4,552,832, Cl. 430-320.000.

Blumenfeld, John F.; and Bubon, Frank, to Emhart Industries, Inc. Glass forehearth. 4,552,579, Cl. 65-346.000.

Board of Regents, The University of Texas System: *See—*
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Bobst SA: *See—*
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BOC Group, Inc., The: *See—*
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Boccadoro, Yves; and Chastagner, Paul, to Regie Nationale des Usines Renault. Process for stabilizing the idle speed of an internal combustion engine with controlled ignition. 4,552,109, Cl. 123-339.000.

Boe, Gunnar H.: *See—*
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Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, to Geophysical Company of Norway A/S. Float arrangement. 4,552,086, Cl. 114-242.000.

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Stevens, Glenn G.; and Kennedy, Roger C., 4,553,216, Cl. 364-558.000.

Bohlin, Leif R. Rheometer for analyzing the elastic and/or viscous characteristics of gels and liquid systems. 4,552,012, Cl. 73-59.000.

Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., to James River-Norwalk, Inc. Packaging container for microwave popcorn popping and method for using. 4,553,010, Cl. 219-10.55E.

Bokalot, Jean, to Societe Nationale Industrielle et Aerospatiale. Safety device for opening an outwardly opening aircraft door in the event of excess pressure inside this aircraft and door equipped therewith. 4,552,326, Cl. 244-129.500.

Bolli, Peter. Toy building block with electrical contacting portions. 4,552,541, Cl. 446-91.000.

Bolomey, Jean-Charles; and Michel, Yves, to Centre National de la Recherche Scientifique; and Societe d'Etude du Radant. Process and means for rapid point by point survey of body scanning radiation field. 4,552,151, Cl. 128-653.000.

Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., to AMP Incorporated. Component insertion apparatus. 4,551,901, Cl. 29-564.600.

Booher, Richard N.; and Kornfeld, Edmund C., to Eli Lilly and Company. Partially hydrogenated pyrazolo, pyrimido and thiazolo[1,4-]benzoxazines. 4,552,956, Cl. 544-101.000.

Boots Company PLC, The: *See—*
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Borgnat, Daniel: *See—*
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Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., to Combustion Engineering, Inc. Integrated coal cleaning process. 4,552,077, Cl. 110-347.000.

Borio, Richard W.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.

Borken, Richard J.: *See—*
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Borodulin, German; Shkolnik, Alexander; and Baron, Raphael. Portable solar water heater. 4,552,125, Cl. 126-437.000.

Borst, Gaylord M.; and Walsworth, Frank J., to Outboard Marine Corporation. Fluid pressure actuated motor with pneumatically-coupled pistons. 4,552,101, Cl. 123-73.0AD.

Bosch, Erhard: *See—*
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Boudreau, Jean-Louis: *See—*
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Bouhelier, Francis; and Vialatte, Claude, to Thomson CSF. Static disturbance signal recording system having detachable programming terminal & programmable fixed part with selectively powered buffer memory. 4,553,223, Cl. 364-900.000.

Bouvet, Lucien: *See—*
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Bowman, Richard P.: *See—*
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Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., to Transamerica Delaval Inc. Transducer systems with overload protection. 4,552,023, Cl. 73-715.000.

Bowsky, Benjamin: *See—*
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Boyd, Gerald D., to Energies Technologies Corp. Electronic ballast for fluorescent lamp. 4,553,071, Cl. 315-244.000.

Boyd, Jerry K.; and Chang, Yu C., to FIP, Inc. Wellhead apparatus. 4,552,213, Cl. 166-88.000.

Boyd, John O. Radiation concentrator. 4,552,126, Cl. 126-451.000.
Bradley Corporation: *See*—
Smart, William A., Jr., 4,552,331, Cl. 251-95.000.
Bradner, William T.: *See*—
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Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., to Black & Decker Inc. Apparatus for feeding a liquid to an applicator. 4,552,477, Cl. 401-188.00R.
Brakelmann, Wolfgang, to Holstein & Kappert GmbH. Method of and device for cleaning hollow spaces in double seat valves. 4,552,167, Cl. 137-15.000.
Brandes, Wilhelm: *See*—
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hansler, Gerd, 4,552,890, Cl. 514-425.000.
Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., to U.S. Philips Corporation. Method and system of transmitting digital information in a transmission ring. 4,553,234, Cl. 370-86.000.
Brandstater, Manfred; and Konnemann, Alfred, to Grote & Hartmann GmbH & Co. KG. Resistance heating element. 4,553,126, Cl. 338-319.000.
Brandt, Howard E., to United States of America, Army. High power millimeter-wave source. 4,553,068, Cl. 315-4.000.
Brandt, Joachim: *See*—
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Brannstrom, Roine; and Soderberg, Nils-Erik, to Stal-Laval Turbin AB. Device for pressure measurement in a pressurized container. 4,552,529, Cl. 432-58.000.
Brantmark, Hakan; and Ennerfelt, Johan, to ASEA Aktiebolag. Industrial robot. 4,553,077, Cl. 318-568.000.
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Braun Aktiengesellschaft: *See*—
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Braun, Josef: *See*—
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Breen, Michael J.: *See*—
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Breitmoser, Georg; and Vogel, Wilhelm, to MTU-Motoren-und Turbinen-Union Muenchen GmbH. Arrangement of discrete structural parts, especially heat exchanger. 4,552,209, Cl. 165-133.000.
Bremner, John M., to Iowa State University Research Foundation, Inc. Method of inhibiting nitrification of ammonium nitrogen. 4,552,581, Cl. 71-61.000.
Brennensholtz, Matthew S.; and Donofrio, Robert L., to North American Philips Consumer Electronics Corp. Surface reflectivity device and method. 4,552,459, Cl. 356-448.000.
Breslow, Jeffrey D.: *See*—
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Bricot, Claude: *See*—
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Brier, Gordon L., to Eli Lilly and Company. Synergistic antibacterial compositions and method of treatment of infections caused by multiple antibiotic-resistant organisms. 4,552,763, Cl. 424-114.000.
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Bronicki, Lucien Y., to Ormat Turbines, Ltd. Hybrid system for generating power. 4,551,980, Cl. 60-698.000.
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Campisi, Carl, to Zenith Electronics Corporation. Component delivery system. 4,551,913, Cl. 29-740.000.
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Carl, Louis C.; and Nevadunsky, Charles J., to ITT Corporation. Spring-loaded check valve. 4,552,174, Cl. 137-527.200.
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Casey, Gary L., to Allied Corporation. Low cost unitized fuel injection system. 4,552,311, Cl. 239-585.000.
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Chauvet, Pierre, to Societe d'Exploitation Cooperative de la Manufacture d'Armes et Cycles de St. Etienne (S.C.O.P.D. Manufrance), a part interest. Improved trigger mechanism for shotguns having superposed barrels. 4,551,936, Cl. 42-42.00R.

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Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., to International Business Machines Corporation. Deposition of a metal from an electroless plating composition. 4,552,787, Cl. 427-304.000.

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Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., to Eastman Kodak Company. Phosphorous diketonate electron accepting ring compounds as sensitizers for electron donating photoconductive compositions. 4,552,825, Cl. 430-83.000.

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Cherry, Sidney J., to Westinghouse Electric Corp. Cup type vacuum interrupter contact. 4,553,003, Cl. 200-144.00B.

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Chiusa, Alessandro: *See*—
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Christie, C. T. Construction method and apparatus for installing a hanger-supported heating element in an electrical resistance furnace. 4,553,246, Cl. 373-130.000.

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Chu, Huai-Pu; and Staugaitis, Charles L., to United States of America, National Aeronautics and Space Administration. Method of coating a substrate with a rapidly solidified metal. 4,552,784, Cl. 427-192.000.

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Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., 4,552,452, Cl. 355-27.000.

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Gabriele, Peter D.; and Rademan, Jerry E., 4,552,885, Cl. 514-316.000.
Green, George E., 4,552,604, Cl. 156-246.000.
Grob, Jurgen; and Kalvoda, Jaroslav, 4,552,871, Cl. 514-172.000.
Haug, Theobald; and Stockinger, Friedrich, 4,552,935, Cl. 525-488.000.
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Citta, Richard W., to Zenith Electronics Corporation. Upstream data packet time slot synchronization with downstream VBI for two-way CATV system. 4,553,161, Cl. 358-86.000.

CKD Corporation: *See*—
Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, 4,552,179, Cl. 137-625.650.

Claremon, David A., to Merck & Co., Inc. Substituted and bridged pyridines useful as calcium channel blocker. 4,552,881, Cl. 514-295.000.

Clark, Brian, to Schlumberger Technology Corporation. Well logging apparatus and method using transverse magnetic mode. 4,553,097, Cl. 324-338.000.

Clark, Raymond W.; and Limpert, Rudolf. Big bale handling system. 4,552,501, Cl. 414-486.000.

Clarkson, Andrew S., to British Nuclear Fuels Limited. Electrochemical apparatus for monitoring and/or measuring a component of a gas and a method of using said apparatus. 4,552,624, Cl. 204-1.00T.

Cleaver, Laird C.: *See*—
Baron, Walter J.; and Cleaver, Laird C., 4,552,207, Cl. 165-95.000.

Clifton, Brian J.; and Alley, Gary D. Monolithic single and double sideband mixer apparatus. 4,553,265, Cl. 455-325.000.

Cline, Richard L.: *See*—
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.

COBE ASDT, Inc.: *See*—
Swersey, Burt L.; and Fried, Peter I., 4,551,882, Cl. 16-226.000.

Coburn, Michael D.: *See*—
Lee, Kien-yin; and Coburn, Michael D., 4,552,598, Cl. 149-47.000.

Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,551,935, Cl. 40-584.000.

Cochrane, Joe Collis: *See*—
West, James C., 4,551,952, Cl. 51-241.00S.

Codex Corporation: *See*—
Parker, Lanny L., 4,553,043, Cl. 307-270.000.

Coe, Richard H., to Motorola, Inc. Communications system enabling radio link access for non-trunked radio units to a multifrequency trunked two-way communications systems. 4,553,262, Cl. 455-15.000.

Cofer, Archie. Trailer hitch lamp guide. 4,552,376, Cl. 280-477.000.

Cofino, Jose B.: *See*—
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., 4,553,035, Cl. 250-566.000.

Cogan, Adrian I.; and Bencuya, Izak, to GTE Laboratories Incorporated. Method of fabricating junction field effect transistors. 4,551,909, Cl. 29-571.000.

Cohen, Lewis, to Double-W Stationery Corporation. Ring mechanism. 4,552,478, Cl. 402-39.000.

Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, to Bayer Aktiengesellschaft. Polycarbonate molding compositions having improved flame retardance. 4,552,911, Cl. 524-94.000.

Cole-Parmer Instrument Company: *See*—
Stanley, Deryl B., 4,552,516, Cl. 417-477.000.

Coleco Industries, Inc.: *See*—
Bromley, Eric; and Schenck, Robert A., 4,552,360, Cl. 273-85.00G.

Coleman, Clarence B., to Fabricated Metals, Inc. Bulk material container with a rigid follower. 4,552,090, Cl. 116-204.000.

Colman, William H., to Lenco, Inc. Gas seal for MIG gun systems. 4,553,013, Cl. 219-74.000.

Colombo, Paul, to Perkin-Elmer Corporation, The. Effusion cell assembly. 4,553,022, Cl. 219-275.000.

Colyer, Timothy D.; and Sensenig, Darryl L., to Armstrong World Industries, Inc. Flotation method for orienting chips in the manufacture of surface covering. 4,552,606, Cl. 156-280.000.

Combustion Engineering, Inc.: *See*—
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.
McCartney, Michael S., 4,552,076, Cl. 110-347.000.

Commissariat a l'Energie Atomique: *See*—
Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, 4,552,431, Cl. 350-96.340.
Vayra, Jean, 4,552,173, Cl. 137-490.000.

Compagnie d'Informatique Militaire, Spatiale et Aeronautique: *See*—
Val, Christian, 4,553,020, Cl. 219-209.000.

Compagnie Industrielle des Telecommunications: *See*—
de Bergh, Guy, 4,552,996, Cl. 179-175.20C.

Company PAX: *See*—
Lindgren, Per, 4,552,338, Cl. 254-134.3FT.

Comparat, Vincent: *See*—
Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, 4,553,062, Cl. 313-93.000.

Congleton, Jerome J. Neutral body posture chair. 4,552,404, Cl. 297-330.000.

Connors, John D.: *See*—
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., 4,552,153, Cl. 128-677.000.

Conoco Inc.: *See*—
Reust, Dennis K., 4,553,028, Cl. 250-201.000.
Sandbrook, Thomas D.; and Scandrol, Roy O., 4,552,651, Cl. 209-1.000.

Conrad, Peter, to Celanese Corporation. Apparatus for gripping an article. 4,552,397, Cl. 294-86.400.

Conroy, David: *See*—
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.

Consiglio Nazionale Delle Ricerche: *See*—
Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, 4,552,726, Cl. 422-184.000.

Consortium fur Elektrochemische Industrie GmbH: *See*—
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,552,942, Cl. 528-34.000.

Conti, Gianfranco. Pincer-gun for electrically heating metal hinges of thermoplastic eyeglass frames. 4,553,021, Cl. 219-234.000.

Cooke, Larry: *See*—
Zasio, John J.; and Cooke, Larry, 4,553,236, Cl. 371-15.000.

Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., to Procter & Gamble Company, The. Penetrating topical pharmaceutical compositions containing corticosteroids. 4,552,872, Cl. 514-175.000.

Cooper Industries, Inc.: *See*—
Anderson, Gene S.; and Watson, David B., 4,552,432, Cl. 350-96.230.
Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., 4,553,008, Cl. 200-148.00R.

Cordis Europa N.V.: *See*—
Van Der Velden, Paulus M., 4,552,625, Cl. 204-1.00T.

Cornell Research Foundation, Inc.: *See*—
Chao, Pane-Chane; and Ku, Walter H., 4,551,905, Cl. 29-571.000.
Raj, Rishi; and Baik, Sunggi, 4,552,711, Cl. 264-65.000.

Corona, Antonio; and Corona, Franco O. Multiple bit screwdriver with improved chuck arrangement. 4,552,043, Cl. 81-490.000.

Corona, Antonio; and Corona, Franco O. Multibit screwdriver with improved bit insertion. 4,552,044, Cl. 81-490.000.

Corona, Franco O.: *See*—
Corona, Antonio; and Corona, Franco O., 4,552,043, Cl. 81-490.000.
Corona, Antonio; and Corona, Franco O., 4,552,044, Cl. 81-490.000.

Correll, Harold E.: *See*—
Brown, Richard P.; and Correll, Harold E., 4,552,194, Cl. 152-410.000.

Cosden Technology, Inc.: *See*—
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,552,612, Cl. 156-494.000.
Hahn, Granville J., 4,552,791, Cl. 428-35.000.
Murley, Jackie D.; and Johnson, Marion, 4,552,717, Cl. 264-549.000.

Couche, Leon; Lacourt, Daniel; and Ventavoli, Roger. Oyster-opening tool. 4,551,886, Cl. 17-75.000.

Courtney, Thomas F., Jr.: *See*—
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,552,770, Cl. 426-535.000.

Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, to Institut Francais du Petrole. Process for manufacturing catalysts containing copper, zinc, aluminum and at least one metal from the group formed of rare earths and zirconium and the resultant catalysts for reactions involving a synthesis gas. 4,552,861, Cl. 502-302.000.

Covington, Roger G.; and Miller, Stephen H., to Eastman Kodak Company. Clamping device for optical disk assemblies. 4,553,232, Cl. 369-287.000.

Cowden, Mollie G. W. Bookholder with magnified viewing window. 4,552,382, Cl. 281-45.000.

Cowley, John J.; and Hussey, Selby D., to Erie Manufacturing Co. Emergency escape device. 4,552,140, Cl. 128-201.250.

Coyle, William E., Sr., to Bilco Tools, Inc. Power tongs control system. 4,552,041, Cl. 81-470.000.

CPC Engineering Corporation: *See*—
Reid, Robert A., 4,552,508, Cl. 415-72.000.

CPC International Inc.: *See*—
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.

Crane & Co.: *See*—
Crane, Timothy T., 4,552,617, Cl. 162-103.000.

Crane, Timothy T., to Crane & Co. Security features in paper. 4,552,617, Cl. 162-103.000.

Creusot-Loire: *See*—
Chrysostome, Gerard; and Borgnat, Daniel, 4,552,203, Cl. 165-1.000.
Morin, Jean-Xavier; and Chrysostome, Gerard, 4,552,078, Cl. 110-347.000.

Crimmins, James W. Infrared telephone extension modulation system. 4,553,267, Cl. 455-606.000.

Cross, Danny R.: *See*—
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,552,499, Cl. 414-125.000.

Crown Controls Corporation: *See*—
Luebrecht, Donald, 4,552,250, Cl. 187-9.00E.

Cudworth, Richard W.: *See*—
Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., 4,551,949, Cl. 51-164.100.

Culbreth, Thomas F., to Westinghouse Electric Corp. Self-sealing electrode guide. 4,553,014, Cl. 219-75.000.

Cullen, Walter P.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.

Cummins Engine Company, Inc.: *See*—
Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., 4,552,662, Cl. 210-232.000.

Cummins, Michael A.; and Powell, Thomas M., to GMFanuc Robotics Corporation. Opener mechanism and system utilizing same. 4,552,506, Cl. 414-735.000.

Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., to General Electric Company. Heat exchanger. 4,552,292, Cl. 228-183.000.

Cushing, R. J., Jr.: *See*—
Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., 4,552,018, Cl. 73-431.000.

Cutlip, Larry D., to Sol-Chem, Inc. Solar assisted heat pump heating and cooling system. 4,551,987, Cl. 62-324.500.

Cyclonaire Corporation: *See*—
Jacobson, Wayne M.; and Quaintance, Roger L., 4,552,489, Cl. 406-39.000.

Cyriax, Wilhelm, to Battenfeld Maschinenfabriken GmbH. Molded-joint assembly. 4,552,384, Cl. 285-111.000.

Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., to Genesco Inc. Thixotropic compositions comprising leather fibers and method for rendering polymeric compositions thixotropic. 4,552,909, Cl. 524-11.000.

Dage, Richard C.; and Schnettler, Richard A., to Merrell Dow Pharmaceuticals Inc. Aroylimidazolones. 4,552,880, Cl. 514-277.000.

Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co. KG: *See*—
Kuckens, Alexander; and Kohl, Horst, 4,552,286, Cl. 222-145.000.

Daikin Industries Ltd.: *See*—
Ishikawa, Nobuo; and Takaoka, Akio, 4,552,694, Cl. 260-239.0BD.

Daikin Kogyo Co., Ltd.: *See*—
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Daimler-Benz Aktiengesellschaft: *See*—
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, 4,552,402, Cl. 297-284.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,553,172, Cl. 358-280.000.

d'Alayer de Costemore d'Arc, Stephane A. M., to Staar S. A. Motion damping suspension system for record playback machines. 4,553,231, Cl. 369-263.000.

Dale, Howard C.: *See*—
Lentz, Scott B.; and Dale, Howard C., 4,552,270, Cl. 211-17.000.

Dalman, G. Conrad: *See*—
Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., 4,551,904, Cl. 29-571.000.

Dam, Robert, to Zenith Electronics Corporation. Self-centering deflection yoke assembly. 4,553,120, Cl. 335-210.000.

Dana Corporation: *See*—
Beckman, John A.; and Sills, David E., 4,552,544, Cl. 464-162.000.

Daniels, William R.; and Young, John S., to GTE Automatic Electric Incorporated. Arrangement for loop analysis testing for a digital switching system. 4,552,997, Cl. 179-175.30R.

Danmar Products, Inc.: *See*—
Marchello, John L., 4,551,861, Cl. 2-425.000.

Dare, Roy R.: *See*—
Alexander, William H.; and Dare, Roy R., 4,552,335, Cl. 251-315.000.

Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., to Ball Corporation. Glassware gauging system. 4,553,217, Cl. 364-560.000.

Davidson, James R., to Xerox Corporation. Sheet transport system. 4,552,448, Cl. 355-3.0SH.

Davies, Alan F., to Davies Office Equipment, Ltd. Visible file pocket support panel. 4,551,934, Cl. 40-535.000.

Davies Office Equipment, Ltd.: *See*—
Davies, Alan F., 4,551,934, Cl. 40-535.000.

Davis, Charles L.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,551,935, Cl. 40-584.000.

Davis, Paul J.; and Reynolds, James F., to International Octrooi Maatschappij "Octropa" B.V. Composition for the control of coccidiosis in poultry. 4,552,759, Cl. 424-93.000.

Dayco Corporation: *See*—
Howerton, Anderson W., 4,552,550, Cl. 474-242.000.

DC Technologies, Inc.: *See*—
Chadbourne, Daniel I., Sr.; and Chadbourne, Daniel I., Jr., 4,552,166, Cl. 137-15.000.

De La Rue Giori S.A.: *See*—
Giori, Gualtiero; and Germann, Albrecht J., 4,552,066, Cl. 101-152.000.

De La Rue Systems Limited: *See*—
Glasson, Peter; and Wood, John, 4,552,075, Cl. 109-52.000.

de Bergh, Guy, to Compagnie Industrielle des Telecommunications. Method and apparatus for evaluating noise level on a telephone channel. 4,552,996, Cl. 179-175.20C.

Deblitz, Gerhard: *See*—
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Wilimczik, Bernd, 4,552,483, Cl. 403-288.000.

DeBoer, Edward D.; and Yahl, Kenneth R., to American Maize-Products Company. Use of improved starch-polyvinyl alcohol composition as a textile size. 4,552,564, Cl. 8-115.600.

Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., to International Standard Electric Corporation. Multiple-ring communication system. 4,553,233, Cl. 370-16.000.

Dechene, Fernand J., to VBM Corporation. Oxygen generator with two compressor stages. 4,552,571, Cl. 55-21.000.

Degussa Aktiengesellschaft: *See*—
Panster, Peter; and Grethe, Horst, 4,552,700, Cl. 556-9.000.

Del Monte Corporation: *See*—
Ross, Edward E., 4,552,189, Cl. 141-80.000.

Delaney, Norma G.; and Gordon, Eric M., to E. R. Squibb & Sons, Inc. Use of diamino alcohols as analgesic agents. 4,552,866, Cl. 514-16.000.

DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 23,23-Difluoro-1α,25-dihydroxy-vitamin D_3. 4,552,698, Cl. 260-397.200.

Denka Consultant & Engineering Company Limited: *See*—
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Denley, Ronald S.: *See*—
Van Zeeland, Anthony J.; and Denley, Ronald S., 4,553,009, Cl. 200-340.000.

Denman, Sandra L.: *See*—
Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., 4,552,705, Cl. 260-465.50R.

Dente, Stephen V.; and Ward, Kenneth J., to Airwick Industries, Inc. Carpet treating compositions containing a polysiloxane to reduce caking. 4,552,777, Cl. 427-393.100.

Depin, Jean-Claude: *See*—
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

Derivaz, Jean-Pierre: *See*—
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Dery, Normand; and Boudreau, Jean-Louis, to Astrolab Inc. Conductor applying apparatus for rear window defrosters. 4,552,611, Cl. 156-391.000.

Desbois, Michel, to Rhone-Poulenc Specialites Chimiques. Process for preparation of α,α-difluoroalkoxy or α,α-difluoroalkylthiophenyl sulfones. 4,552,984, Cl. 568-29.000.

Descure, Pierrick: *See*—
Chautemps, Jacques; and Descure, Pierrick, 4,553,168, Cl. 358-213.000.

Dettmer, Jay R., to Sperry Corporation. Angle based stroke generator. 4,553,214, Cl. 364-521.000.

Deubzer, Bernward; and Wilhelm, Hermann, to Wacker-Chemie GmbH. Aqueous compositions containing an organosilicon compound. 4,552,910, Cl. 524-43.000.

Deutsche Babcock Werke Aktiengesellschaft: *See*—
Jarmuzewski, Hans-Georg, 4,552,097, Cl. 122-4.00D.

Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V.: *See*—
Fritscher, Klaus; and Gedanitz, Horst, 4,552,722, Cl. 422-53.000.

Deutsche Kommunal-Anlagen Miete GmbH: *See*—
Hillekamp, Klaus, 4,552,732, Cl. 423-210.000.

Deutsches Krebsforschungszentrum Stiftung Des Offentichen Rechts: *See*—
Kartenbeck, Jurgen, 4,552,640, Cl. 204-301.000.

Devaux, Albert F. L. G.; and Moniotte, Philippe G., to Monsanto Europe, S.A. Sulphur-containing polymers useful as stabilizing agents for rubber vulcanizates. 4,552,929, Cl. 525-332.600.

Dewey, Anthony G., to International Business Machines Corporation. Color display from a single light valve. 4,552,441, Cl. 353-31.000.

Diamond Shamrock Chemicals Company: *See*—
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,552,670, Cl. 252-8.50C.

Diazzi, Claudio: *See*—
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, 4,553,046, Cl. 307-289.000.

Di Egidio, Leo C. Sports geography jackstraw game. 4,552,357, Cl. 273-1.0GG.

Dietz, Martin: *See*—
Munk, Edmund; and Dietz, Martin, 4,552,797, Cl. 428-167.000.

Digital Equipment Corporation: *See*—
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.

Digonnet, Michel J. F.: *See*—
Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., 4,553,238, Cl. 372-6.000.

Dillinger, Thomas E.; and Kueper, Terrance W., to International Business Machines Corporation. Regulator for substrate voltage generator. 4,553,047, Cl. 307-297.000.

Dingwall, Andrew G. F.; and Zazzu, Victor, to RCA Corporation. Apparatus for matching FET switches as for a video digital-to-analog converter. 4,553,132, Cl. 340-347.0DA.

Dischert, Robert A.: *See*—
Hurst, Robert N., Jr.; and Dischert, Robert A., 4,553,157, Cl. 358-27.000.

Distelrath, Peter: *See*—
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Distin, Robert G., Jr.; and Lang, Thomas J., to Advanced Energy Concepts '81 Ltd. Retainer for epicyclic transmission. 4,552,037, Cl. 74-805.000.

Djordjevic, Ilija, to Stanadyne, Inc. Fuel injection pump with spill control mechanism. 4,552,117, Cl. 123-506.000.

Doboy Verpackungsmaschinen GmbH: *See*—
Prottengeier, Manfred, 4,551,965, Cl. 53-463.000.

Dobson, John E.: *See*—
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., 4,552,497, Cl. 412-6.000.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,552,622, Cl. 202-241.000.

Dr. Ing. h.c.F. Porsche AG: *See*—
Trenkler, Werner, 4,552,401, Cl. 296-219.000.

Dr. Karl F. Nagele Feinmaschinenbau GmbH & Co: *See*—
Hansen, Henning; and Schneider, Helmut, 4,551,900, Cl. 29-408.000.

Doerr, Richard D.; Muller, J. Joseph; and Green, William A., to ACF Industries, Inc. Idle speed controller improvement. 4,553,076, Cl. 318-282.000.

Doi, Makoto: *See*—
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Dombrowski, David M.; and Anastasi, Kenneth J., to General Electric Company. Cutting tool. 4,552,046, Cl. 82-36.00A.

Dominguez, Edward J. Collapsible wedge for sliding doors and windows. 4,552,395, Cl. 292-342.000.

Domino, William J.; Havens, Donald P.; and Johnson, Robert A., to Rockwell International Corporation. Electromechanical resonator apparatus. 4,553,060, Cl. 310-333.000.

Donaldson, George W., to Westinghouse Electric Corp. Door control apparatus. 4,551,944, Cl. 49-31.000.

Donaldson, John H.; Brunswick, Robert; and Foulkes, Andrew J., to Wellcome New Zealand Limited. Applicators. 4,552,559, Cl. 604-198.000.

Donofrio, Robert L.: *See*—
Brennensholtz, Matthew S.; and Donofrio, Robert L., 4,552,459, Cl. 356-448.000.

Dornier System GmbH: *See*—
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Dorow, Joachim: *See*—
Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, 4,552,068, Cl. 101-415.100.

Dorr-Oliver, Incorporated: *See*—
Freeman, Mark P., deceased, 4,552,019, Cl. 73-584.000.

Double-W Stationery Corporation: *See*—
Cohen, Lewis, 4,552,478, Cl. 402-39.000.

Douziech, Patrick; and Imbert, Michel, to Thomson-CSF. Circuit and process for chrominance decoding with analog or digital delay line in a television system of a pal or secam type. 4,553,156, Cl. 358-24.000.

Dow Chemical Company, The: *See*—
Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., 4,552,945, Cl. 528-62.000.
Cavitt, Michael B.; and Wassberg, Neal L., 4,552,814, Cl. 428-414.000.
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,552,904, Cl. 521-145.000.
Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., 4,552,685, Cl. 252-355.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,902, Cl. 521-129.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,903, Cl. 521-137.000.

Dow Corning Corporation: *See*—
Bauman, Therese M.; and Lee, Chi-Long, 4,552,901, Cl. 521-122.000.

Dowty Mining Equipment Limited: *See*—
Elliott-Moore, Peter, 4,552,488, Cl. 405-299.000.

Doyle, Terrence W.: *See*—
Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., 4,552,842, Cl. 435-75.000.
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.

Dragerwerk Aktiengesellschaft: *See*—
Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., 4,552,139, Cl. 128-200.140.
Pasternack, Adalbert, 4,551,858, Cl. 2-7.000.
Torri, G., 4,552,141, Cl. 128-205.120.

Drapkin, William B., to Pass & Seymour, Inc. Electric outlet having novel screw anchor and ground connection. 4,552,421, Cl. 339-14.00R.

Dreckmann, Karl, to M. Lehmacher & Sohn GmbH Maschinenfabrik. Double- and bottom-seam bag-making method and apparatus. 4,552,551, Cl. 493-194.000.

Dreher, Bernd; and Schneider, Wolfgang, to Ciba Geigy Corporation. Prestressing elements coated with plastic material and process for making them. 4,552,815, Cl. 428-415.000.

Drenth, Berend W.: *See*—
Werners, Theo F. H.; and Drenth, Berend W., 4,552,339, Cl. 254-277.000.

Dropczynski, Hartmut; and Trilling, Peter, to Jagenberg AG. Method and apparatus for winding webs of cellulose. 4,552,316, Cl. 242-56.00R.

Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, to Atochem. Composition for the alkaline bleaching of textiles containing peroxyamine. 4,552,563, Cl. 8-107.000.

Ducharme, Marcel, to Inno-Tech Developments Ltd. Method of drying and salting fish. 4,552,766, Cl. 426-294.000.

Ducote, Marjorie E., to United States of America, Army. Liner-propellant bond tests. 4,552,706, Cl. 264-3.00R.

Dumas, Herve : *See*—
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.

Dunlop Limited: *See*—
Skipper, John B., 4,552,035, Cl. 74-581.000.

Dupin, Thierry: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,552,650, Cl. 208-216.0PP.

Duplo Seizo Kabushiki Kaisha: *See*—
Tanaka, Kazunori; and Yoshikawa, Mitsuru, 4,552,353, Cl. 271-124.000.

Du Pont de Nemours, E. I., and Company: *See*—
Bissot, Thomas C.; and Li, Stephen, 4,552,631, Cl. 204-98.000.
Eigenbrode, George T., deceased, 4,552,420, Cl. 339-14.00R.
Fish, Floyd H., Jr.; and Lauterbach, Herbert G., 4,552,805, Cl. 428-297.000.
Romanauskas, William A., 4,552,278, Cl. 215-277.000.

Duracell Inc.: *See*—
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Durand, Daniel: *See*—
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

DuRand, Elden E., III, to Bluegrass Electronics Inc. Sound discriminator tester. 4,552,022, Cl. 73-647.000.

Durham, B. Elwood. Fish strike indicator. 4,552,318, Cl. 242-84.10K.

Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, to K. Bratschi, Silent Gliss. Strip curtain. 4,552,195, Cl. 160-168.00R.

Duruz, Jean-Jacques R.: *See*—
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Dutt, Herbert V.; and Santostasi, Paul A., to Sun Coast Plastics, Inc. Mold for making tamper-proof closure. 4,552,328, Cl. 249-67.000.

Duyvesteyn, Willem P. C.; and Hogsett, Robert F., to Amax, Inc. Electrogalvanizing utilizing primary and secondary zinc sources. 4,552,629, Cl. 204-55.00R.

Dwyer, Francis G.: *See*—
Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., 4,552,648, Cl. 208-120.000.

Dynachem Corporation: *See*—
Reardon, Edward J.; and Lipson, Melvin A., 4,552,830, Cl. 430-281.000.

Dysarz, Edward D., to Branham Industries, Inc. Pickup and lay-down apparatus. 4,552,498, Cl. 414-22.000.

Dziggel, Klaus-Peter: *See*—
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, 4,552,072, Cl. 104-88.000.

Dziki, Michael M., to Minnesota Mining and Manufacturing Company. Thermoplastic dispensing device. 4,552,287, Cl. 222-146.500.

E. R. Squibb & Sons, Inc.: *See*—
Delaney, Norma G.; and Gordon, Eric M., 4,552,866, Cl. 514-16.000.

East, David S., to Knight Manufacturing Company, Inc. Fishing lure. 4,551,940, Cl. 43-42.110.

East, Gary P.: *See*—
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

East, John; and Maxwell, Ian, to Metal Box Public Limited Company. Continuous extrusion of metals. 4,552,520, Cl. 425-79.000.

Easter, James R.: *See*—
Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James R., 4,552,718, Cl. 376-216.000.

Eastman Kodak Company: *See*—
Barbee, Robert B.; and Wicker, Thomas H., Jr., 4,552,948, Cl. 528-194.000.
Baumeister, Hans-Peter, 4,553,175, Cl. 358-310.000.
Bayer, Bryce E., 4,553,165, Cl. 358-167.000.
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.
Covington, Roger G.; and Miller, Stephen H., 4,553,232, Cl. 369-287.000.
Gabrielsen, Rolf S., 4,552,980, Cl. 564-79.000.
Gourley, Robert N., 4,552,951, Cl. 534-770.000.
Gourley, Robert N., 4,552,952, Cl. 534-782.000.
Lau, Philip T. S.; and Einhaus, Gary M., 4,552,834, Cl. 430-393.000.
Lowne, Alan J., 4,552,458, Cl. 356-446.000.
McColgin, William C.; and Pace, Laurel J., 4,553,153, Cl. 357-30.000.
Silkman, Ronald W., 4,553,027, Cl. 235-474.000.
Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., 4,552,838, Cl. 430-569.000.
Yudelson, Joseph S.; and Johnson, Thomas M., 4,552,848, Cl. 436-86.000.

Eaton Corporation: *See*—
Baltare, Gunnar, 4,552,254, Cl. 188-328.000.
Glenn, Robert L., 4,553,005, Cl. 200-153.0LA.
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,553,151, Cl. 357-23.400.

Eaves, Thomas P. Cutting tool mechanism. 4,552,192, Cl. 144-136.00C.

Eberhard Hoesch & Sohne GmbH & Co.: *See*—
Schotten, Alfons, 4,552,660, Cl. 210-225.000.

Ebihara, Hideyuki: *See*—
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., to ALZA Corporation. Body mounted pump housing and pump assembly employing the same. 4,552,561, Cl. 604-896.000.

Ecomard, Andre , to Institut Francais du Petrole. Device for regulating the pressure of a fluid supplied to a feeding circuit from a fluid source. 4,552,169, Cl. 137-115.000.

Economopoulos, Peter C.: *See*—
Ong, Richard H.; and Economopoulos, Peter C., 4,553,053, Cl. 307-530.000.

Eder, Theodor; and Koser, Jaroslav, to Eder, Theodor; and Austria Metall Aktiengesellschaft. Planking assembly and method of making same. 4,552,085, Cl. 114-84.000.

Egendorf, Harris H. Counting computer software cartridge. 4,553,252, Cl. 377-15.000.

Egle, Edward J. System for improving the starting of diesel engines in cold weather. 4,552,102, Cl. 123-179.00H.

Ehnstrom, Lars: *See*—
Baeling, Peter; and Ehnstrom, Lars, 4,552,775, Cl. 426-624.000.

Eickmann, Karl. Radial piston machine, employing a medial rotor bearing. 4,552,054, Cl. 91-492.000.

Eigenbrode, George T., deceased (by Eigenbrode, Judy E., executrix), to Du Pont de Nemours, E. I., and Company. Electrical connector using a flexible circuit having an impedance control arrangement thereon. 4,552,420, Cl. 339-14.00R.

Eigenbrode, Judy E., executrix: *See*—
Eigenbrode, George T., deceased, 4,552,420, Cl. 339-14.00R.

Einhaus, Gary M.: *See*—
Lau, Philip T. S.; and Einhaus, Gary M., 4,552,834, Cl. 430-393.000.

EKA AB: *See*—
Berglin, Carl T.; and Herrmann, Wolfgang, 4,552,748, Cl. 423-588.000.

Eklund, Nils; and Huang, Jen-chi, to Polychrome Corp. Planographic printing plate having cationic compound in interlayer. 4,552,827, Cl. 430-160.000.

Electricity Council, The: *See*—
Aubrey, David R.; and Kearley, Stephen J., 4,553,188, Cl. 361-115.000.

Electronic Processors, Inc.: *See*—
Lynch, Donald F., 4,553,178, Cl. 360-45.000.

Elesa S.p.A.: *See*—
Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, 4,552,034, Cl. 74-547.000.

Eli Lilly and Company: *See*—
Booher, Richard N.; and Kornfeld, Edmund C., 4,552,956, Cl. 544-101.000.
Brier, Gordon L., 4,552,763, Cl. 424-114.000.
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.
Ho, Peter P. K.; and Soper, Quentin F., 4,552,891, Cl. 514-443.000.
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.
Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., 4,552,895, Cl. 514-470.000.
Krumkalns, Eriks V.; and Smiley, David L., 4,552,886, Cl. 514-342.000.
Krumkalns, Eriks V.; and Smiley, David L., 4,552,960, Cl. 544-336.000.
Lacefield, William B.; and Pfeifer, William, 4,552,982, Cl. 564-164.000.
Nagarajan, Ramakrishnan; and Schabel, Amelia A., 4,552,701, Cl. 260-112.50R.
Scott, William L., 4,552,889, Cl. 514-424.000.

Elkay Manufacturing Company: *See*—
Farrell, Gerald J.; and Bisonaya, Rudy Y., 4,552,171, Cl. 137-359.000.

Elkem a/s: *See*—
Andersen, Einar; and Boe, Gunnar H., 4,552,632, Cl. 204-107.000.

Ellington, Rex T., to Occidental Oil Shale, Inc. In situ oil shale retort with controlled permeability for uniform flow. 4,552,409, Cl. 299-2.000.

Elliott, Guy R. B. Magnesium reduction of uranium fluoride in molten salts. 4,552,588, Cl. 75-84.400.

Elliott-Moore, Peter, to Dowty Mining Equipment Limited. Mine roof support system. 4,552,488, Cl. 405-299.000.

Ellison, Richard: *See—*
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.

Elm, Chance R.; and Lowrey, Erlend R., to Procter & Gamble Company, The. Process for making roll-on antiperspirant compositions. 4,552,753, Cl. 424-66.000.

ELTECH Systems Corporation: *See—*
Katz, Michael; Hinden, Jean; and Gauger, Jurgen, 4,552,857, Cl. 502-101.000.
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Emeraud, Jackie: *See—*
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Emerson Electric Co.: *See—*
Vogel, Richard E.; and Bowsky, Benjamin, 4,551,984, Cl. 62-193.000.

Emhart Industries, Inc.: *See—*
Blumenfeld, John F.; and Bubon, Frank, 4,552,579, Cl. 65-346.000.

Emi, Shingo: *See—*
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,552,810, Cl. 428-398.000.

Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., to General Motors Corporation. Fuel consumption measuring system. 4,552,015, Cl. 73-113.000.

Endo, Hiroshi, to Nissan Motor Company, Limited. Optical pulse radar for an automotive vehicle. 4,552,456, Cl. 356-5.000.

Endo, Hiroyuki: *See—*
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.

Endo, Tsuyoshi. Hardy tube pump. 4,552,515, Cl. 417-472.000.

Endoh, Naoki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for encoding a binary data stream into a binary code stream. 4,553,131, Cl. 340-347.0DD.

Energies Technologies Corp.: *See—*
Boyd, Gerald D., 4,553,071, Cl. 315-244.000.

Engel, John F.: *See—*
Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., 4,552,892, Cl. 514-531.000.

Engelhard Corporation: *See—*
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.
Wilcox, Jeannine; and Karustis, George A., 4,552,628, Cl. 204-47.000.

Engelhardt, Fritz: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

English, James M.; Gurreri, Nicholas L.; and Kling, John P., to AMP Incorporated. Encapsulated printed circuit board filter. 4,553,114, Cl. 333-182.000.

Ennerfelt, Johan: *See—*
Brantmark, Hakan; and Ennerfelt, Johan, 4,553,077, Cl. 318-568.000.

Erchegyi, Judit: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Drier. 4,551,925, Cl. 34-4.000.

Erie Manufacturing Co.: *See—*
Cowley, John J.; and Hussey, Selby D., 4,552,140, Cl. 128-201.250.

Ernst, Volker: *See—*
Opower, Hans; and Ernst, Volker, 4,553,242, Cl. 372-87.000.

ESA, Inc.: *See—*
Matson, Wayne R., 4,552,013, Cl. 73-61.10C.

Escher Wyss GmbH: *See—*
Schnell, Hans, 4,552,462, Cl. 366-280.000.

Essery, John M.: *See—*
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.

Ester, Clayton L.: *See—*
Etherington, Roger F.; and Ester, Clayton L., 4,552,155, Cl. 128-766.000.

Estes, William E., to Stauffer Chemical Company. Method to improve yields of sodium hypophosphite. 4,552,737, Cl. 423-307.000.

Esteve-Soler, Jose, to Provesan, SA. 7-(1-Pyrrolyl) derivatives of 1-ethyl-1,4-dihydro-4-oxoquinoline-3-carboxylic acids and 1-ethyl-1,4-dihydro-4-oxo-1,8-naphthyridine-3-carboxylic acids and their use as antimicrobial agents. 4,552,882, Cl. 514-300.000.

Etablissements Caillau: *See—*
Calmettes, Lionel, 4,552,390, Cl. 285-420.000.

Etablissements Nativelle S.A.: *See—*
Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, 4,552,868, Cl. 514-26.000.

Etherington, Roger F.; and Ester, Clayton L., to Transmed Corporation. Diagnostic specimen collector. 4,552,155, Cl. 128-766.000.

Ethicon Inc.: *See—*
How, Thien V., 4,552,707, Cl. 264-24.000.

Ethyl Corporation: *See—*
Ramachandran, Venkataraman, 4,552,963, Cl. 546-156.000.
Ramachandran, Venkataraman, 4,552,964, Cl. 546-156.000.
Ranken, Paul F.; and Walter, Thomas J., 4,552,966, Cl. 546-290.000.

Eumuco Aktiengesellschaft fur Maschinenbau: *See—*
Stehr, Franz, 4,552,525, Cl. 425-422.000.

Eurofloor S.A.: *See—*
Haag, Laurent, 4,552,796, Cl. 428-140.000.

Evans, Edwin C., to Gamma One Conversions, Inc. Scanning light system. 4,553,193, Cl. 362-8.000.

Evans, Gary E., to Westinghouse Electric Corp. Method of forming the far-field beam pattern of an antenna. 4,553,145, Cl. 343-360.000.

Evans, Robert F.; and Stafford, Charles W., to Varel Mfg. Co. Low pressure differential compensator. 4,552,228, Cl. 175-228.000.

Everett, Nicholas P., to Stauffer Chemical Company. Plant growth medium. 4,552,844, Cl. 435-240.000.

Ex-Cell-O Corporation: *See—*
Johnson, D. Dale, 4,552,344, Cl. 267-64.110.

Exxon Research and Engineering Co.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., 4,552,916, Cl. 524-399.000.
Patterson, Ann D.; and Kachel, Wayne M., 4,552,649, Cl. 208-127.000.
Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., 4,552,856, Cl. 502-74.000.
Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., 4,552,939, Cl. 526-287.000.
Vaughan, David E., 4,552,731, Cl. 423-118.000.

Fabbri, Vittorio E.; and Bell, Jackie D. Apparatus for treating hair. 4,552,159, Cl. 132-9.000.

Fabricated Metals, Inc.: *See—*
Coleman, Clarence B., 4,552,090, Cl. 116-204.000.

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Patel, Kirit, 4,551,970, Cl. 57-339.000.

Falb, H. Wolfgang: *See—*
Altner, Ulrich; Falb, H. Wolfgang; and Wallroth, Carl F., 4,552,139, Cl. 128-200.140.

Falk Corporation, The: *See—*
Witt, Ronald A., 4,552,257, Cl. 192-56.00F.

Fantini, Amedeo A.: *See—*
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

Farrell, Gerald J.; and Bisonaya, Rudy Y., to Elkay Manufacturing Company. Supply conduit mounting assembly for single lever faucet. 4,552,171, Cl. 137-359.000.

Farrington, Theodore E., Jr.: *See—*
Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, 4,552,709, Cl. 264-504.000.

Faust, Eberhard: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Quillmalz, Wolfram, 4,552,402, Cl. 297-284.000.

Fawzi, Mahdi B.: *See—*
Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., 4,552,872, Cl. 514-175.000.

Feder, Darryl. Apparatus for metalizing metal bodies. 4,552,091, Cl. 118-620.000.

Federal Paper Board Co., Inc.: *See—*
Lee, John F., 4,552,268, Cl. 206-455.000.

Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., to Garlock, Inc. Hub seal and axle assembly and method for its assembly. 4,552,367, Cl. 277-1.000.

Feeser, Hermann: *See—*
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.

Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, to International Business Machines Corporation. Transmission line terminator-decoupling capacitor chip for off-chip driver. 4,553,050, Cl. 307-443.000.

Feldner, Kurt; and Grape, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of dimethyldichlorosilane. 4,552,973, Cl. 556-469.000.

Felix, Raymond A., to Stauffer Chemical Company. O,O-Di-(substituted)-1-phosphonomethyl-3-(substituted)-1,3-imidazol-4-one intermediates. 4,552,968, Cl. 548-112.000.

Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., to Baxter Travenol Laboratories, Inc. Method for disinfecting, for reuse, separation devices for blood and associated fluid lines. 4,552,721, Cl. 422-28.000.

Ferguson, Frank Warren: *See—*
Steffel, Steve, 4,552,535, Cl. 434-315.000.

Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, to Lipha, Lyonnaise Industrielle Pharmaceutique. Benzo- and thieno-triazine-1,2,3 ones-4. 4,552,878, Cl. 514-243.000.

Fey, Rainer, to Fichtel & Sachs AG. Central locking installation. 4,553,038, Cl. 307-10.0AT.

Fiatallis Europe S.p.A.: *See—*
Barbagli, Rino O., 4,552,031, Cl. 74-473.00R.

Fiatallis North America, Inc.: *See—*
Joyce, Hardin, Jr., 4,552,238, Cl. 180-139.000.

Fiberglas Canada Inc.: *See—*
Cameron, Neil M.; and Blackmore, Phillip W., 4,552,793, Cl. 428-53.000.

Fichtel & Sachs AG: *See—*
Fey, Rainer, 4,553,038, Cl. 307-10.0AT.

Field, Frank P. Display bin. 4,552,272, Cl. 211-88.000.

Fields, Larry R.; and Kendrick, George B., to GTE Products Corporation. Multiple filament lamp having wire grid to provide filament redundancy. 4,553,066, Cl. 313-580.000.

Filterwerk Mann & Hummel GmbH: *See—*
Poldner, Erich, 4,552,283, Cl. 220-304.000.

Findlay, Gordon R., to Lufran, Inc. Gas-purged flexible cable-type immersion heater and method for heating highly corrosive liquids. 4,553,024, Cl. 219-335.000.

Finger, John F., to Sioux Steam Cleaner Corporation. Electric combination cleaner. 4,552,162, Cl. 134-57.00R.

Fingerle, Hermann: *See—*
Grimm, Hans; and Fingerle, Hermann, 4,551,947, Cl. 51-34.00H.

FIP, Inc.: *See—*
Boyd, Jerry K.; and Chang, Yu C., 4,552,213, Cl. 166-88.000.

Firetek Corporation: *See—*
Cholin, John M.; Voorhis, Ray; and Cholin, Jeffrey G., 4,553,031, Cl. 250-339.000.

Fisch, Richard S., to Minnesota Mining and Manufacturing Company. Method of forming composite image as in add-on non-silver microfiche. 4,552,826, Cl. 430-142.000.

Fish, Floyd H., Jr.; and Lauterbach, Herbert G., to Du Pont de Nemours, E. I., and Company. Composites reinforced with high strength aramid fibers having fibrillated ends. 4,552,805, Cl. 428-297.000.

Fish, Richard H., to United States of America, Energy. Removal of arsenic compounds from spent catecholated polymer. 4,552,854, Cl. 502-26.000.

Fisher, Gary H.; and Padgett, H. Pat, to Industrial Sheet Metal & Mechanical Corp. Air-conditioning system. 4,552,303, Cl. 236-44.00C.

Fisher, George W. Nut and washer holding adjustable wrench. 4,552,039, Cl. 81-64.000.

Flasza, Michael D.; and Nienaber, David K., to Zenith Electronics Corporation. Picture control for RGB monitor. 4,553,141, Cl. 340-703.000.

Fleishman, Gregg R. Space frame structural system. 4,551,960, Cl. 52-648.000.

Flexibox Limited: *See—*
Wallace, Neil M., 4,552,368, Cl. 277-27.000.

Flider, Frank S., to Justrite Manufacturing Company. Automatic venting sealing cap. 4,552,288, Cl. 222-482.000.

Fluid Devices Ltd.: *See—*
Larner, Donald A., 4,552,027, Cl. 73-861.530.

FMC Corporation: *See—*
Beacham, Harry H.; and Mucenieks, Paul R., 4,552,687, Cl. 252-500.000.
Brown, Richard A.; and Norris, Robert D., 4,552,668, Cl. 210-759.000.
Brown, Richard A.; and Norris, Robert D., 4,552,674, Cl. 252-8.55R.
Brown, Richard A.; and Norris, Robert D., 4,552,675, Cl. 252-8.55R.
Chang, Jun H., 4,552,585, Cl. 71-88.000.
Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., 4,552,892, Cl. 514-531.000.

Fogle, Ozzie: *See—*
Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., 4,552,792, Cl. 428-40.000.

Folkerts, Cornie. Hitch pin securing device. 4,552,377, Cl. 280-515.000.

Ford Motor Company: *See—*
Baker, Robert R.; and Allor, Richard L., 4,552,024, Cl. 73-821.000.
Veneziano, Marcello, 4,553,207, Cl. 364-431.010.

Forestiere, Alain: *See—*
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

Forgac, John M.; and Hoekstra, George R., to Standard Oil Company (Indiana); and Gulf Oil Corporation. Pulsed in situ retorting in an array of oil shale retorts. 4,552,214, Cl. 166-259.000.

Forrest, William J. Sorting gate assembly. 4,552,096, Cl. 119-155.000.

Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, to Dornier System GmbH. Couch for patients. 4,552,348, Cl. 269-324.000.

Forsyth, John L.: *See—*
Sanders, Royden C., Jr.; and Forsyth, John L., 4,552,064, Cl. 101-93.050.

Fortuna, Vincent E.; and MacLaughlin, Donald N., to Cosden Technology, Inc. Inertial spin welding of thermoplastic and thermoplastic coated container parts. 4,552,612, Cl. 156-494.000.

Foster, Frederick S.: *See—*
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,552,349, Cl. 270-54.000.

Foster, Kenneth D. Compression link adaptor assembly. 4,552,379, Cl. 280-661.000.

Foster Wheeler Energy Corporation: *See—*
Neale, Thomas J., 4,552,490, Cl. 406-56.000.

Foulkes, Andrew J.: *See—*
Donaldson, John H.; Brunswick, Robert; and Foulkes, Andrew J., 4,552,559, Cl. 604-198.000.

Fouser, William: *See—*
Getz, Stephen; and Fouser, William, 4,551,875, Cl. 7-138.000.

Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., to Olin Corporation. Slip sheet retainers. 4,552,499, Cl. 414-125.000.

Fox, Kenneth R., to GTE Automatic Electric Incorporated. Wiring pair reversal detector. 4,553,088, Cl. 324-66.000.

Foxwell, W. John, to Prince Manufacturing Company. Power cylinder with internally mounted position indicator. 4,552,055, Cl. 92-5.00R.

Francis, Geoffrey V. Structural spacer glazing with connecting spacer device. 4,552,790, Cl. 428-34.000.

Franey, Terence E., to International Business Machines Corporation. Radiation hardened lift-off correction medium and process of manufacture. 4,552,634, Cl. 204-159.230.

Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., to Xerox Corporation. Static eliminator. 4,553,191, Cl. 361-212.000.

Frear, Lawrence, to Spiral Drilling Systems, Inc. Drill-bit with full offset cutter bodies. 4,552,232, Cl. 175-337.000.

Freeman, Helen M., executrix: *See—*
Freeman, Mark P., deceased, 4,552,019, Cl. 73-584.000.

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Frei, Theo: *See—*
Haenni, Eduard; and Frei, Theo, 4,552,002, Cl. 72-19.000.

Fresenius AG: *See—*
Polaschegg, Hans-Dietrich; and Mathieu, Bernd, 4,552,552, Cl. 604-4.000.

Frey, Gregg W., to Advanced Technology Laboratories, Inc. Method of making electrically conductive thin epoxy bond. 4,552,607, Cl. 156-330.000.

Fried, Peter I.: *See—*
Swersey, Burt L.; and Fried, Peter I., 4,551,882, Cl. 16-226.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Herring, William P.; and Kostorz, Jan R., 4,552,176, Cl. 137-625.400.

Fritscher, Klaus; and Gedanitz, Horst, to Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V. Apparatus for the hot gas corrosion of samples of material. 4,552,722, Cl. 422-53.000.

Froessl, Horst. Document and data handling and retrieval system. 4,553,261, Cl. 382-57.000.

Fruzzetti, Richard E.: *See—*
Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., 4,552,913, Cl. 524-240.000.

Fuerstenau, Douglas W.: *See—*
Attia, Yosry A.; and Fuerstenau, Douglas W., 4,552,652, Cl. 209-5.000.

Fuji Electric Co., Ltd.: *See—*
Guiler, Richard S., 4,551,999, Cl. 70-159.000.
Kawasaki, Kikuo; and Sano, Tomomi, 4,553,211, Cl. 364-479.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Takano, Toshio; and Kobayashi, Toshio, 4,552,036, Cl. 74-705.000.

Fuji Photo Film Co., Ltd.: *See—*
Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, 4,552,808, Cl. 428-328.000.
Nakamura, Taku; and Kasama, Yasuo, 4,552,835, Cl. 430-523.000.
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.
Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, 4,552,828, Cl. 430-217.000.
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Fujio; and Kurata, Masami, 4,553,174, Cl. 358-285.000.
Yamamoto, Tadashi; and Kurata, Masami, 4,553,160, Cl. 358-75.000.

Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic circuit for an anti-locking braking system. 4,552,414, Cl. 303-115.000.

Fujii, Shuzo: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, to Aisin Seiki Kabushiki Kaisha. Anti-skid brake control system for automobiles. 4,552,413, Cl. 303-106.000.

Fujimori, Eiichi, to Japan Steel Works, Ltd., The. Process for the production of activated carbon using wood as a carbon source. 4,552,863, Cl. 502-418.000.

Fujimoto, Misao: *See—*
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.

Fujita, Masahito: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.

Fujita, Toshio; and Watanabe, Kazuhiro, to Nippon Kouatsu Electric Co. Low-temperature sintered porcelain composition suitable for forming. 4,552,915, Cl. 524-322.000.

Fujitsu Limited: *See—*
Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, 4,553,090, Cl. 324-73.0AT.
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.
Mukai, Ryoichi, 4,551,907, Cl. 29-571.000.
Ohe, Yoshikazu, 4,553,225, Cl. 365-201.000.
Sasaki, Susumu, 4,553,105, Cl. 330-145.000.

Fujiwara, Katsuyoshi: *See*—
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Fujiwara, Tetsuo: *See*—
Yamamoto, Masao; and Fujiwara, Tetsuo, 4,551,975, Cl. 60-528.000.

Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, to Fuji Photo Film Co., Ltd. Magnetic recording material using plate-shaped ferromagnetic particles. 4,552,808, Cl. 428-328.000.

Fujiyama, Masaaki: *See*—
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.

Fukatsu, Yasumasa: *See*—
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, 4,553,257, Cl. 381-57.000.

Fukaya, Hirokazu, to NEC Corporation. Control circuit for controlling output pulse width using negative feedback signal. 4,552,118, Cl. 123-609.000.

Fukaya, Hiroyasu: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Fukaya, Kuniaki: *See*—
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Fukuda, Tadaji: *See*—
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.

Fukukita, Hiroshi: *See*—
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Fukumoto, Akira: *See*—
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Fukunaga, Takahiro: *See*—
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.

Fukuoka, Shinsuke; and Watanabe, Tomonari, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing diphenylmethane dicarbamates. 4,552,974, Cl. 560-25.000.

Fukushima, Yoshiaki: *See*—
Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, 4,552,806, Cl. 428-312.600.

Fukuta, Masaru: *See*—
Kase, Kiyoshi; and Fukuta, Masaru, 4,553,054, Cl. 307-597.000.

Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, to Hoechst Aktiengesellschaft. Acesulfam-containing composition tablets on the basis thereof and process for the manufacture of these tablets. 4,552,771, Cl. 426-548.000.

Fulterer Gesellschaft m.b.H.: *See*—
Fulterer, Manfred, 4,552,415, Cl. 308-3.800.

Fulterer, Manfred, to Fulterer Gesellschaft m.b.H. Adjustable drawer mounting assembly. 4,552,415, Cl. 308-3.800.

Funada, Fumiaki: *See*—
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, 4,552,436, Cl. 350-337.000.

Furnier-U.Sperrholzwerk: *See*—
Munk, Edmund; and Dietz, Martin, 4,552,797, Cl. 428-167.000.

Furuhashi, Hiroyuki: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Furukawa Electric Co., Ltd., The: *See*—
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.
Noguchi, Masahisa; and Kaneda, Kazuji, 4,552,314, Cl. 242-25.00R.

Furukawa, Heisaburo: *See*—
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.

Furuya, Yoshiyuki: *See*—
Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, 4,552,690, Cl. 252-512.000.

G. Rau GmbH & Co.: *See*—
Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, 4,553,063, Cl. 313-325.000.

GAA Engineered Systems, Inc.: *See*—
Goar, B. Gene, 4,552,747, Cl. 423-574.00R.

Gabriele, Peter D.; and Rademan, Jerry E., to Ciba Geigy Corporation. Stabilized fungicide compositions. 4,552,885, Cl. 514-316.000.

Gabrielsen, Rolf S., to Eastman Kodak Company. Dye precursors and their use in photographic materials and processes. 4,552,980, Cl. 564-79.000.

Gaiffier, Albert, to Societe Anonyme: Construction Electriques R.V. Current generator for the supply and detection of operation of a gas burner and control device applying same. 4,552,528, Cl. 431-25.000.

Gallup, William; and Schmidt, Detleff W. P., to Permutare Corporation. Standby water-powered basement sump pump. 4,552,512, Cl. 417-3.000.

Galluzzo, Angela: *See*—
Galluzzo, Vincent; Galluzzo, Angela; and Galluzzo, Victor T., 4,552,538, Cl. 440-99.000.

Galluzzo, Victor T.: *See*—
Galluzzo, Vincent; Galluzzo, Angela; and Galluzzo, Victor T., 4,552,538, Cl. 440-99.000.

Galluzzo, Vincent; Galluzzo, Angela; and Galluzzo, Victor T. Multidirectional amphibious safety vehicle. 4,552,538, Cl. 440-99.000.

Galstaun, Lionel S., to Bechtel International Corporation. Process for desulfurization of fuel gas. 4,552,572, Cl. 55-36.000.

Galvin, Aaron A. Hot weather hat. 4,551,857, Cl. 2-7.000.

Gamma One Conversions, Inc.: *See*—
Evans, Edwin C., 4,553,193, Cl. 362-8.000.

Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, to Robert Bosch GmbH. Internal masking layer to prevent parallax in an electro-optical display or indicator unit. 4,552,437, Cl. 350-339.00R.

GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,552,383, Cl. 283-83.000.

Gardner, Michael S. Applicator for livestock tag. 4,552,147, Cl. 128-330.000.

Garivaltis, Dimitris: *See*—
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.

Garlock, Inc.: *See*—
Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., 4,552,367, Cl. 277-1.000.

Garrett, Charles B., to Varian Associates, Inc. Magnetron sputter etching system. 4,552,639, Cl. 204-298.000.

Garrett Corporation, The: *See*—
Lewis, Leon D., 4,551,972, Cl. 60-39.281.

Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., to Stone & Webster Engineering Corporation. Process for cracking heavy hydrocarbon to produce olefins and liquid hydrocarbon fuels. 4,552,645, Cl. 208-80.000.

Gaskell, David J., to Lucas Industries public limited company. Fuel injection nozzles. 4,552,310, Cl. 239-533.500.

Gathje, John C.: *See*—
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., 4,552,589, Cl. 75-105.000.

Gauckler, Ludwig: *See*—
Vire , Sylvestre; and Gauckler, Ludwig, 4,552,637, Cl. 204-243.00R.

Gauger, Jurgen: *See*—
Katz, Michael; Hinden, Jean; and Gauger, Jurgen, 4,552,857, Cl. 502-101.000.

Gavagan, James A.; and Motyka, Jerry, to Irvin Industries Inc. Combination VSI and ALR retractor. 4,552,319, Cl. 242-107.40A.

Gebr. Marzhauser Wetzlar oHG: *See*—
Marzhauser, Heinz, 4,552,033, Cl. 74-479.000.

Gedanitz, Horst: *See*—
Fritscher, Klaus; and Gedanitz, Horst, 4,552,722, Cl. 422-53.000.

Gehrke, Robert E., to K. J. Law Engineers, Inc. Method and apparatus for measuring conductivity using eddy currents with temperature compensation feature. 4,553,094, Cl. 324-225.000.

Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, to G. Rau GmbH & Co. Electrical discharge electrode and method of production thereof. 4,553,063, Cl. 313-325.000.

GenCorp Inc.: *See*—
Linnstaedter, Don J., 4,552,521, Cl. 425-131.100.

General Dynamis Electronics Division: *See*—
Mathis, Ronald F., 4,553,101, Cl. 329-50.000.

General Electric Company: *See*—
Castonguay, Roger N.; and Jencks, Charles L., 4,553,119, Cl. 335-147.000.
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.
Dombrowski, David M.; and Anastasi, Kenneth J., 4,552,046, Cl. 82-36.00A.
Germano, Carmen P., 4,553,061, Cl. 310-332.000.
Komanduri, Ranga; and Reed, William R., Jr., 4,552,492, Cl. 407-114.000.
Mark, Victor, 4,552,704, Cl. 260-463.000.
Mark, Victor, 4,552,949, Cl. 528-201.000.
McCready, Russell J., 4,552,950, Cl. 528-292.000.
Moore, James E., 4,552,936, Cl. 525-519.000.
Rosenquist, Niles R.; and Tyrell, John A., 4,552,924, Cl. 525-146.000.
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., 4,552,783, Cl. 427-91.000.

General Foods Corporation: *See*—
Saleeb, Fouad Z.; and Zeller, Bary L., 4,552,767, Cl. 426-395.000.

General Instrument Corp.: *See*—
Nickels, Richard C., Jr.; and Stevens, Gerald S., Jr., 4,552,352, Cl. 271-10.000.

General Ionex Corporation: *See*—
Purser, Kenneth H., 4,553,069, Cl. 315-111.810.

General Loose Leaf Bindery Co., Inc.: *See*—
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., 4,552,479, Cl. 402-74.000.

General Mills Products Corp.: *See*—
Quarrell, Richard; and Ranson, Paul A., 4,552,264, Cl. 206-45.140.

General Motors Corporation: *See*—
Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., 4,552,015, Cl. 73-113.000.
Koivunen, Erkki A., 4,552,545, Cl. 474-16.000.
Kornylo, Walter P., 4,551,891, Cl. 24-669.000.

General Signal Corporation: *See*—
Sibley, Henry C., 4,553,200, Cl. 364-200.000.

Genesco Inc.: *See*—
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.

Genrich, Thad J., to Motorola, Inc. Synchronous carry frequency divider and method of using therefor. 4,553,218, Cl. 364-703.000.

Geophysical Company of Norway A/S: *See*—
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Gerard, Jean L.; and Bricot, Claude, to Thomson-CSF. Mobile pre-etched data carrier and an optical tracking device using such a carrier. 4,553,228, Cl. 369-46.000.

Gerhardt, Gilbert C. Cap. 4,551,859, Cl. 2-172.000.

Germann, Albrecht J.: *See*—
Giori, Gualtiero; and Germann, Albrecht J., 4,552,066, Cl. 101-152.000.

Germano, Carmen P., to General Electric Company. Piezoelectric bimorph driven direct current latching relay. 4,553,061, Cl. 310-332.000.

Gerry, Martin E. Magnetic pulse timer. 4,552,119, Cl. 123-617.000.

Gerth, Hans-Heinrich: *See*—
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Gesellschaft fur Strahlen- und Umweltforschung mbH, Munchen: *See*—
Kuhn, Wilhelm; and Bunnenberg, Claus, 4,553,087, Cl. 324-65.00P.

Getty Oil Company: *See*—
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., 4,552,589, Cl. 75-105.000.

Getz, Stephen; and Fouser, William, to International Telephone and Telegraph Corporation. Combination tool. 4,551,875, Cl. 7-138.000.

Geus, John W.: *See*—
van der Wal, Willem J. J.; and Geus, John W., 4,552,750, Cl. 423-656.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Weirich, Walter, 4,552,487, Cl. 405-295.000.

Ghibaudo, Eduardo J.: *See*—
Ghibaudo, Jose A.; and Ghibaudo, Eduardo J., 4,552,500, Cl. 414-408.000.

Ghibaudo, Jose A.; and Ghibaudo, Eduardo J. Refuse hauling and storage apparatus. 4,552,500, Cl. 414-408.000.

Giallorenzi, Thomas G.; Sheem, Sang K.; and Taylor, Henry F. Fiber optic interferometer using two wavelengths or variable wavelength. 4,552,457, Cl. 356-345.000.

Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., to Duracell Inc. Sealed nickel-zinc battery. 4,552,821, Cl. 429-57.000.

Gilbert, Eli: *See*—
Kurland, Lawrence G.; and Gilbert, Eli, 4,553,222, Cl. 364-900.000.

Gillespie, Thomas W. Concentrated composition for cleaning rugs and carpets. 4,552,692, Cl. 252-528.000.

Gillette Company, The: *See*—
Jacobson, Chester F., 4,551,916, Cl. 30-50.000.

Gilvin, Allie F.: *See*—
Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,552,600, Cl. 156-73.100.

Giori, Gualtiero; and Germann, Albrecht J., to De La Rue Giori S.A. Combined sheet fed rotary printing machine for securities, in particular bank-notes. 4,552,066, Cl. 101-152.000.

Glaeser, Christopher D.: *See*—
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,553,203, Cl. 364-200.000.

Glaser, Michael S.; and Rochester, James R., to Hughes Aircraft Company. System and method for detecting a plurality of targets. 4,552,454, Cl. 356-5.000.

Glasson, Peter; and Wood, John, to De La Rue Systems Limited. Secure container, for example for banknotes. 4,552,075, Cl. 109-52.000.

Glauberman, Gisela: *See*—
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, 4,552,942, Cl. 528-34.000.

Gleason, George W.: *See*—
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.

Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., to SmithKline Beckman Corporation. Leukotriene antagonists. 4,552,893, Cl. 514-560.000.

Glenn, Robert L., to Eaton Corporation. Trigger operated electric switch. 4,553,005, Cl. 200-153.0LA.

GMFanuc Robotics Corporation: *See*—
Cummins, Michael A.; and Powell, Thomas M., 4,552,506, Cl. 414-735.000.

Goans, Kip B.; and Gober, Ruel R., Jr. Fusible-elements holder bracket device. 4,552,222, Cl. 169-57.000.

Goar, B. Gene, to GAA Engineered Systems, Inc.; and Air Products and Chemicals, Inc. Temperature moderation of an oxygen enriched Claus sulfur plant. 4,552,747, Cl. 423-574.00R.

Gobel, Primin: *See*—
Bernauer, Joachim; Dorow, Joachim; and Gobel, Primin, 4,552,068, Cl. 101-415.100.

Gober, Ruel R., Jr.: *See*—
Goans, Kip B.; and Gober, Ruel R., Jr., 4,552,222, Cl. 169-57.000.

Goerne, Jan; and Toussaint, Hans-Norbert, to Siemens Aktiengesellschaft. Method and circuit arrangement for converting a binary signal, alternating between two levels, to a pulse code signal which comprises data pulses and renewal pulses. 4,553,249, Cl. 375-25.000.

Goi, Koichi: *See*—
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Goliber, Thomas E.: *See*—
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.

Golker, Christian: *See*—
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., 4,552,954, Cl. 536-24.000.

Gollinger, Franz X., to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine with offset bearing and drive for an exchange cylinder. 4,552,067, Cl. 101-216.000.

Goodman, Irving; and Hiatt, Robert B., to Research Corporation. Peptides for control of intestinal motility. 4,552,764, Cl. 514-2.000.

Goodyear Aerospace Corporation: *See*—
Brown, Richard P.; and Correll, Harold E., 4,552,194, Cl. 152-410.000.

Goodyear Tire & Rubber Company, The: *See*—
Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., 4,552,913, Cl. 524-240.000.

Gordon, Eric M.: *See*—
Delaney, Norma G.; and Gordon, Eric M., 4,552,866, Cl. 514-16.000.

Gorman, Robert H., to American Robot Corporation. Industrial robot having direct coaxial motor drive. 4,552,505, Cl. 414-735.000.

Goss, Raymond W., to Hercules Incorporated. Composition for tufted carpets containing azidosulfonyl silane crosslinker. 4,552,794, Cl. 428-95.000.

Goto, Jugo; and Kubota, Tsutomu, to Takeda Chemical Industries, Ltd. Solid resin composition. 4,552,920, Cl. 525-58.000.

Gottschalk, Karl-Heinz, to Babcock Textilmaschinen GmbH. Fiber removing sieve for textile dryers. 4,551,928, Cl. 34-82.000.

Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., to Medi-Tech Incorporated. Introducing catheter. 4,552,554, Cl. 604-51.000.

Gould, Dennis R.; and Zuk, Robert F., to Syntex (U.S.A.) Inc. Determination of analytes in particle-containing medium. 4,552,839, Cl. 435-7.000.

Gould Inc.: *See*—
Harris, Robert W., 4,553,247, Cl. 375-4.000.

Gourley, Robert N., to Eastman Kodak Company. Disperse and acid azo dyes having one or two cinnamoyl substituents on a phenyl diazonium moiety and containing an aniline, tetrahydroquinoline or benzomorpholine coupler. 4,552,951, Cl. 534-770.000.

Gourley, Robert N., to Eastman Kodak Company. Disperse and acid azo dyes having one or two cinnamoyl substituents on a benzothiazole or benzoisothiazole diazonium moiety and having an aniline, tetrahydroquinoline or benzomorpholine type coupler. 4,552,952, Cl. 534-782.000.

Graf, Martin, to Grob & Co. Aktiengesellschaft. Heald frame. 4,552,185, Cl. 139-91.000.

Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, to New Balance Athletic Shoe, Inc. Sole construction for footwear. 4,551,930, Cl. 36-30.00R.

Graham, Stephen H., to Varian Associates, Inc. Hydraulic pulse dampener employing two stiff diaphragms and nesting members. 4,552,182, Cl. 138-30.000.

Grams, Ralph R. Method of inhibiting the growth of marine life on surfaces in contact with seawater. 4,552,813, Cl. 428-411.100.

Granger, Maurice. Rolled web dispenser. 4,552,315, Cl. 242-55.300.

Granot, Moshe. Self-cleaning filter apparatus. 4,552,655, Cl. 210-108.000.

Granzow, Robert H.: *See*—
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Grape, Wolfgang: *See*—
Feldner, Kurt; and Grape, Wolfgang, 4,552,973, Cl. 556-469.000.

Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, to Consiglio Nazionale Delle Ricerche. Plant consisting of modular elements for degrading organic wastes by means of earth worms. 4,552,726, Cl. 422-184.000.

Gravatt, Barton A., to Pall Corporation. Adsorbent fractionator with automatic cycle control and process. 4,552,570, Cl. 55-20.000.

Gray Tool Company: *See*—
Stewart, Vernon G.; and Adamek, Frank C., 4,552,369, Cl. 277-226.000.

Green, George E., to Ciba Geigy Corporation. Bonding method employing film adhesives. 4,552,604, Cl. 156-246.000.

Green, George F.: *See*—
Spahic, Bojana K.; and Green, George F., 4,552,816, Cl. 428-420.000.

Green, Sheryll C.: *See*—
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.

Green, William A.: *See*—
Doerr, Richard D.; Muller, J. Joseph; and Green, William A., 4,553,076, Cl. 318-282.000.

Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., to Eli Lilly and Company. Process for the synthesis of intermediates in the preparation of diaminopyridines. 4,552,967, Cl. 546-307.000.

Grefe, Peter, to Shur-Lok Corporation. Die, platen and joining means for attaching said die to said platen. 4,552,050, Cl. 83-685.000.

Gregory, Graham W.: *See*—
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.

Greiner, Ulrich: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus, Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Gretag Aktiengesellschaft: *See—*
Luscher, Rene , 4,552,029, Cl. 74-96.000.
Luscher, Rene , 4,552,285, Cl. 221-13.000.

Grethe, Horst: *See—*
Panster, Peter; and Grethe, Horst, 4,552,700, Cl. 556-9.000.

Gretsch-Unitas GmbH Baubeschlage: *See—*
von Resch, Julius M., 4,551,945, Cl. 49-221.000.

Grewer, Theodor: *See—*
Hahnle, Reinhard; and Grewer, Theodor, 4,552,699, Cl. 260-404.500.

Grey, Vincent G. Offshore incineration of hazardous waste materials. 4,552,082, Cl. 114-26.000.

Griggs, Gloria D., to Tip-N-Wrap, Inc. Attaching an artificial nail. 4,552,160, Cl. 132-73.000.

Grimm, Hans; and Fingerle, Hermann, to Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Device for honing workpieces. 4,551,947, Cl. 51-34.00H.

Gritter, Roy J.: *See—*
Adams, Gary E.; Casper, John M.; and Gritter, Roy J., 4,552,723, Cl. 422-66.000.

Grob & Co. Aktiengesellschaft: *See—*
Graf, Martin, 4,552,185, Cl. 139-91.000.

Grob, Jurgen; and Kalvoda, Jaroslav, to Ciba Geigy Corporation. Steroids of the 20-spiroxane series, processes for the manufacture thereof, pharmaceutical preparations containing such compounds and the use of the latter. 4,552,871, Cl. 514-172.000.

Grohman, Larry F.: *See—*
Wong, Fred S.; and Grohman, Larry F., 4,552,219, Cl. 166-321.000.

Grolitzer, Marilyn A., to Olin Corporation. Blend of alkyl phenol ethoxylates and alkyl phenol glycoxylates and their use as surfactants. 4,552,673, Cl. 252-8.55D.

Gronfor, Dennis I., to Land O'Lakes, Inc. Cheese-like product. 4,552,774, Cl. 426-582.000.

Gross, Jack R.: *See—*
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Grote & Hartmann GmbH & Co. KG: *See—*
Brandstater, Manfred; and Konnemann, Alfred, 4,553,126, Cl. 338-319.000.

Grotloh, Karl H., to Sulzer Brothers Limited. Pressure medium actuated valve. 4,552,330, Cl. 251-30.010.

Grouse, Alan F.: *See—*
Brown, Fred A.; and Grouse, Alan F., 4,553,075, Cl. 318-254.000.

Grunert, Kurt A.; and Huffman, Walter K., to Westinghouse Electric Corp. Molded case circuit breaker with single solenoid operator for rectilinear handle movement. 4,553,115, Cl. 335-14.000.

Grutzner, Hans: *See—*
Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, 4,552,195, Cl. 160-168.00R.

Gryrberg, Ami; and Ronen, Ya'Acov, to Israel Aircraft Industries Ltd. Electromagnetic field perimeter detection apparatus. 4,553,135, Cl. 340-564.000.

GTE Automatic Electric Incorporated: *See—*
Daniels, William R.; and Young, John S., 4,552,997, Cl. 179-175.30R.
Fox, Kenneth R., 4,553,088, Cl. 324-66.000.

GTE Communication Systems Corporation: *See—*
McNesby, John B.; and Walker, Erik K., 4,553,129, Cl. 340-347.0DD.

GTE Communications Products Corporation: *See—*
Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., 4,553,244, Cl. 372-95.000.

GTE Laboratories Incorporated: *See—*
Cogan, Adrian I.; and Bencuya, Izak, 4,551,909, Cl. 29-571.000.

GTE Lenkurt Incorporated Communication Systems: *See—*
Skidanenko, Constantine V.; and McGibbon, Gregor D., 4,552,994, Cl. 179-16.0AA.

GTE Products Corporation: *See—*
Fields, Larry R.; and Kendrick, George B., 4,553,066, Cl. 313-580.000.
Hsieh, Martin Y., 4,552,851, Cl. 501-98.000.
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., 4,552,729, Cl. 423-55.000.
Mizuhara, Howard, 4,552,057, Cl. 92-176.000.
Roche, William J.; and Parks, Ralph P., Jr., 4,553,067, Cl. 313-546.000.

GTE Valeron Corporation: *See—*
Kroetsch, Charles F., 4,553,001, Cl. 200-61.410.

GTI Corporation: *See—*
Swanson, William E., 4,553,220, Cl. 364-715.000.

Gugel, Bernd; and Niebel, Harald, to Mannesmann AG. Print head with permanent magnetic bias. 4,552,471, Cl. 400-124.000.

Guiler, Richard S., to Fuji Electric Co., Ltd. Lock assembly for enclosure cover. 4,551,999, Cl. 70-159.000.

Gulf Oil Corporation: *See—*
Forgac, John M.; and Hoekstra, George R., 4,552,214, Cl. 166-259.000.

Gulf States Paper Corporation: *See—*
Blagg, Bobby W.; and Gulliver, Richard F., 4,552,293, Cl. 229-1.50B.

Gulf & Western Manufacturing Company: *See—*
Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., 4,551,989, Cl. 62-468.000.

Gulliver, Richard F.: *See—*
Blagg, Bobby W.; and Gulliver, Richard F., 4,552,293, Cl. 229-1.50B.

Gundersen, Steven C.: *See—*
Chainer, Timothy J.; Gundersen, Steven C.; and Worthington, Thomas K., 4,553,259, Cl. 382-3.000.

Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, to Ardal og Sunndal Verk a.s. Ring section baking furnace and procedure for operating same. 4,552,530, Cl. 432-192.000.

Gurevich, Alex: *See—*
Gurevich, Joseph; and Gurevich, Alex, 4,551,867, Cl. 4-420.400.

Gurevich, Joseph; and Gurevich, Alex. Toilet bowl which washes. 4,551,867, Cl. 4-420.400.

Gurreri, Nicholas L.: *See—*
English, James M.; Gurreri, Nicholas L.; and Kling, John P., 4,553,114, Cl. 333-182.000.

Guyton, David L. Apparatus for determination of potential visual acuity utilizing a slit lamp microscope. 4,552,440, Cl. 351-214.000.

Haag, Laurent, to Eurofloor S.A. Composite product having a low-porosity support layer. 4,552,796, Cl. 428-140.000.

Haag, William G.; and Chavdarian, Charles G., to Stauffer Chemical Co. S-Dithiocarbamoylmethyl trithiophosphonate insecticides, compositions and use. 4,552,870, Cl. 514-89.000.

Haber, Terry M. Prosthetic sphincter. 4,551,862, Cl. 623-14.000.

Haber, Terry M. Elastomechanical sphincter. 4,552,128, Cl. 128-1.00R.

Habich, Adolph B., to International Business Machines Corporation. Method for manufacturing a wire matrix print wire guiding device. 4,552,716, Cl. 264-328.100.

Haderer, Norman G., to Westinghouse Electric Corp. Strippable insulated wire and method of making same. 4,552,988, Cl. 174-74.00R.

Haenni, Eduard; and Frei, Theo, to Hammerle, AG. Plate bending apparatus. 4,552,002, Cl. 72-19.000.

Hafele, Robert X., to Hoover Universal, Inc. Blow molding machine with mold shuttle structure. 4,552,526, Cl. 425-522.000.

Haga, Tsutomu: *See—*
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,552,243, Cl. 181-169.000.

Hagen, Glenn E., to Williams. Inc. Wave driven work extracting device. 4,552,514, Cl. 417-332.000.

Haghiri-Tehrani, Yahya: *See—*
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,552,383, Cl. 283-83.000.

Hagopian, Gary J.: *See—*
Barfield, Gilbert; and Hagopian, Gary J., 4,552,004, Cl. 72-60.000.

Hahn, Granville J., to Cosden Technology, Inc. Plastic container with decreased gas permeability. 4,552,791, Cl. 428-35.000.

Hahnle, Reinhard; and Grewer, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of 3-acylaminoanilines. 4,552,699, Cl. 260-404.500.

Haigh Chadwick Limited: *See—*
Brunnschweiler, David, 4,552,235, Cl. 177-1.000.

Hal Johnston Pty. Limited: *See—*
Taylor, William R., 4,552,728, Cl. 422-300.000.

Hale, Gilbert L.: *See—*
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.

Hale, Peter G.: *See—*
Titchmarsh, James G.; and Hale, Peter G., 4,552,433, Cl. 350-96.230.

Hales, Paul D. Telephone activation apparatus. 4,552,993, Cl. 179-2.00A.

Hall, Charles P., to Monterey Manufacturing Co. Waterbed mattress with a baffle. 4,551,873, Cl. 5-450.000.

Hall, Ralph F.: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,552,893, Cl. 514-560.000.

Hall Systems, Inc.: *See—*
Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., 4,552,349, Cl. 270-54.000.

Halliburton Company: *See—*
Almond, Stephen W.; and Himes, Ronald E., 4,552,215, Cl. 166-278.000.
Knox, Lloyd C.; and Moore, Clayton A., 4,552,486, Cl. 405-227.000.
Revett, Lowell W., 4,552,234, Cl. 175-4.600.
Walker, Michael L., 4,552,672, Cl. 252-8.55C.

Halter, Hartmut, to Reifenhauser GmbH & Co. Maschinenfabrik. Apparatus for coiling a synthetic resin foil web. 4,552,317, Cl. 242-65.000.

Hamada, Itsuo: *See—*
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,552,904, Cl. 521-145.000.

Hamilton Industries: *See—*
Yindra, Leonard J., 4,552,403, Cl. 297-330.000.

Hamlin, James M.: *See—*
Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., 4,552,838, Cl. 430-569.000.

Hammer, Heiner I., to Schlegel Lining Technology GmbH. Process and prepressing pipe for laying a pipeline in the earth. 4,552,485, Cl. 405-184.000.

Hammerle, AG: *See—*
Haenni, Eduard; and Frei, Theo, 4,552,002, Cl. 72-19.000.

Hansen, Henning; and Schneider, Helmut, to Dr. Karl F. Nagele Feinmaschinenbau GmbH & Co. Method of and apparatus for mounting separable slide fastener connectors. 4,551,900, Cl. 29-408.000.

Hansen, Jan: *See*—
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.

Hansen, Jan M.: *See*—
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.

Hansen, Paul E.; and Marquardt, Susan K., to Minnesota Mining and Manufacturing Co. Inelastic, heat-elasticizable sheet material. 4,552,795, Cl. 428-110.000.

Hanssler, Gerd: *See*—
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.

Hara, Kenjiro; and Shirose, Haruya, to Nissan Motor Co., Ltd. Crankshaft of V-6 internal combustion engine. 4,552,104, Cl. 123-192.00R.

Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, to Furukawa Electric Co., Ltd., The; and Nippon Telephone & Telegraph Public Corp. Method of fabricating optical glass base material and apparatus for fabricating the same. 4,552,576, Cl. 65-2.000.

Hara, Shoji: *See*—
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.

Harada, Koosuke; and Murata, Katsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. High frequency power supply device. 4,553,199, Cl. 363-75.000.

Harada, Masatoshi: *See*—
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.

Harasaki, Hayathugu; and Matsuura, Osamu, to Mazda Motor Company. Two-door type automobile body structure. 4,552,400, Cl. 296-185.000.

Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., to American Cyanamid Company, a part interest. Anastomotic device. 4,552,148, Cl. 128-334.00C.

Hardy, Thomas R.: *See*—
Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,552,600, Cl. 156-73.100.

Harjar, Martin J., to Nordson Corporation. Apparatus for locking the wrist links of a work robot in the same respective relative positions to facilitate calibration of the wrist link position transducers thereof. 4,552,502, Cl. 414-680.000.

Harmon, Elred R.: *See*—
Seaquist, James J.; and Harmon, Elred R., 4,552,424, Cl. 339-32.00R.

Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., to Akzona Incorporated. Method for making bicomponent fibers. 4,552,603, Cl. 156-167.000.

Harris, Robert W., to Gould Inc. Telemetry system with signal booster for digital data transmission through a transmission line. 4,553,247, Cl. 375-4.000.

Hartlaub, Jerome T., to Medtronic, Inc. Waveform morphology discriminator and method. 4,552,154, Cl. 128-702.000.

Hartman, John W.: *See*—
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.

Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., to Procter & Gamble Company, The. Hypochlorite bleach containing surfactant and organic antifoamant. 4,552,680, Cl. 252-102.000.

Hartmann, Peter, to BBC Brown, Boveri & Company, Limited. Method and system for synchronizing the coding and decoding during the transmission of digital coded data. 4,553,251, Cl. 375-114.000.

Hasegawa, Akio: *See*—
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.

Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Double superheterodyne tuner. 4,553,264, Cl. 455-189.000.

Hasegawa, Morimichi: *See*—
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.

Hasegawa, Ryusuke: *See*—
Anderson, Philip M., III; Hasegawa, Ryusuke; and VonHoene, Robert M., 4,553,136, Cl. 340-572.000.

Hasegawa, Tsunao, to Pioneer Electronic Corporation. Recording start position setting device for use in a tape recorder. 4,553,180, Cl. 360-74.400.

Hasegawa, Yuuji: *See*—
Sagara, Seiji; and Hasegawa, Yuuji, 4,552,447, Cl. 355-3.00R.

Hashimoto, Masayuki: *See*—
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,552,904, Cl. 521-145.000.

Hashimoto, Takashi, to Pioneer Electronic Corp. Central processing unit restoring mechanism for a system having a plurality of central processing units. 4,553,204, Cl. 364-200.000.

Hashimoto, Toshihiko: *See*—
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Hasse, Peter: *See*—
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, to Fujitsu Limited. Method and apparatus for testing a logic circuit using parallel to serial and serial to parallel conversion. 4,553,090, Cl. 324-73.0AT.

Hattori, Noriaki: *See*—
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.

Hattori, Satoru: *See*—
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.

Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. V-Belt transmission apparatus. 4,552,548, Cl. 474-201.000.

Hattori, Torao, to Honda Giken Kogyo Kabushiki Kaisha. V-Belt transmission device. 4,552,549, Cl. 474-202.000.

Hattori, Yoshiaki; and Ishihara, Makoto, to Noritake Co., Limited. Carbon fiber-reinforced gypsum models and forming molds. 4,552,329, Cl. 249-134.000.

Haug, Theobald; and Stockinger, Friedrich, to Ciba-Geigy Corporation. Heat-curable epoxy resin mixtures containing imide compounds and condensation products of phenols, amines and aldehydes or ketones. 4,552,935, Cl. 525-488.000.

Haugland, Tor-Arvid: *See*—
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Hauni-Werke Korber & Co. KG.: *See*—
Lewandowski, Willi, 4,551,953, Cl. 51-268.000.

Havens, Donald P.: *See*—
Domino, William J.; Havens, Donald P.; and Johnson, Robert A., 4,553,060, Cl. 310-333.000.

Hawkins, Bruce. High speed dump valve for fire fighting apparatus. 4,552,181, Cl. 137-875.000.

Hayasaka, Tadao: *See*—
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.

Hayashi, Chikahisa; and Kanayama, Masakatsu, to Toyoda Gosei Co., Ltd. Leakage inspection device for brake hoses. 4,553,212, Cl. 364-507.000.

Hayashi, Hajime: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Hayashi, Hideo: *See*—
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.

Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Cellular glass coated with a heat insulator. 4,552,806, Cl. 428-312.600.

Haynes, Hendrick W. Marine propulsion device with engine heat recovery system and streamlining hull closures. 4,552,537, Cl. 440-47.000.

Hazelett Strip-Casting Corp.: *See*—
Wood, John F. B., 4,552,201, Cl. 164-481.000.

Heidelberger Druckmaschinen AG: *See*—
Jahn, Hans-Georg, 4,552,069, Cl. 101-420.000.

Heidemann, Helmut: *See*—
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Heiermann, Siegfried; and Lachner, Hans, to Klockner-Becorit GmbH. Remote controlled bolt removing apparatus for bolts securing the head of a reactor pressure vessel. 4,552,038, Cl. 81-57.380.

Hein, James R., to Olympic Fastening Systems. Pulling head for blind fasteners. 4,552,010, Cl. 72-391.000.

Hein, Karl; Hubig, Markus; and Seroka, Helmut, to Klockner CRA Technologie GmbH. Method and apparatus for preheating and charging scrap in steelmaking. 4,552,342, Cl. 266-175.000.

Heindl, Alfons: *See*—
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

Helms, Roseann S.: *See*—
Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., 4,552,792, Cl. 428-40.000.

Helmy, Nash N.: *See*—
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.

Henderson, Ross: *See*—
Chan, Edward Y.; Henderson, Ross; and Vaudo, Anthony J., 4,553,198, Cl. 363-56.000.

Henkel KGaA: *See*—
Maak, Norbert; and Lieske, Edgar, 4,552,565, Cl. 8-409.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, 4,552,681, Cl. 252-140.000.
Schmid, Karl; and Baumann, Horst, 4,552,702, Cl. 260-428.000.

Hennebel, Christiaan G. M. M.: *See*—
Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., 4,553,233, Cl. 370-16.000.

Henocq, Emile: *See*—
Relyveld, Edgar H.; and Henocq, Emile, 4,552,756, Cl. 424-88.000.

Hepworth, Malcolm T.: *See*—
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.

Heraty, Michael: *See*—
Heraty, Patrick T.; and Heraty, Michael, 4,552,476, Cl. 401-136.000.

Heraty, Patrick T.; and Heraty, Michael. Combination high pressure wand and brush for vehicle washing. 4,552,476, Cl. 401-136.000.

Herbrechtsmeier, Peter: *See—*
Koch, Manfred; and Herbrechtsmeier, Peter, 4,552,977, Cl. 562-435.000.
Hercules Incorporated: *See—*
Goss, Raymond W., 4,552,794, Cl. 428-95.000.
Herdle, William B., to Union Carbide Corporation. Preparation of polyalkylene polyamines using phosphorus amide catalyst. 4,552,961, Cl. 544-402.000.
Hermann Hemscheidt Maschinenfabrik GmbH & Co.: *See—*
Krieger, Karl; and Reinelt, Werner, 4,552,172, Cl. 137-484.600.
Hermanson, William C.: *See—*
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.
Hermle, Klaus: *See—*
Truper, Dirk; and Hermle, Klaus, 4,553,040, Cl. 307-116.000.
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Berglin, Carl T.; and Herrmann, Wolfgang, 4,552,748, Cl. 423-588.000.
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Stiggelbout, William A., 4,551,914, Cl. 29-837.000.
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Goodman, Irving; and Hiatt, Robert B., 4,552,764, Cl. 514-2.000.
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Katz, Michael; Hinden, Jean; and Gauger, Jurgen, 4,552,857, Cl. 502-101.000.
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Hirano, Yutaka; and Kawai, Hiroki, to Sumitomo Corporation; and Nikken Sekkei Ltd. Method of foaming a foamable composition in a sealed sack. 4,552,601, Cl. 156-79.000.
Hironaka, Kouji: *See—*
Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, 4,553,016, Cl. 219-121.0LG.
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, to Hitachi, Ltd. Washing machine with drier. 4,551,996, Cl. 68-20.000.
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Sano, Yukinori; Hoshi, Yoshikazu; and Takahashi, Ikuo, 4,552,114, Cl. 123-481.000.
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Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.
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Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, 4,551,991, Cl. 62-476.000.
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Sugawara, Yoshitaka, 4,553,125, Cl. 338-283.000.
Tokuyama, Keiichi; Naito, Shotaro; and Watanabe, Shizuhisa, 4,553,196, Cl. 363-21.000.
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Yoh, Kanji; and Yamashiro, Osamu, 4,553,098, Cl. 324-433.000.
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Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.
Ho, Peter P. K.; and Soper, Quentin F., to Eli Lilly and Company. Benzothiophene derivatives. 4,552,891, Cl. 514-443.000.
Hoag, Ethan D.; and Ravid, Amotz, to Metalworking Lasers International Ltd. Cooled mirror and method of cooling same particularly useful in lasers. 4,552,439, Cl. 350-610.000.
Hobbs, Milton M.: *See—*
Martens, Alan; Hobbs, Milton M.; and Snow, Bennie E., 4,552,099, Cl. 122-451.100.
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Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.
Hodson, Harry. Method and apparatus for producing a colloidal mixture. 4,552,253, Cl. 366-295.000.
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Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, 4,552,970, Cl. 548-543.000.
Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, 4,552,771, Cl. 426-548.000.
Hahnle, Reinhard; and Grewer, Theodor, 4,552,699, Cl. 260-404.500.
Koch, Manfred; and Herbrechtsmeier, Peter, 4,552,977, Cl. 562-435.000.
Ott, Karl-Erich; and Behrens, Thomas, 4,552,461, Cl. 366-279.000.
Rudolphy, Albert; and Werner, Gerhard, 4,552,592, Cl. 106-30.000.
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.
Hoekstra, George R.: *See—*
Forgac, John M.; and Hoekstra, George R., 4,552,214, Cl. 166-259.000.
Hoenstine, James M.; and Ray, Thomas E. Hydroplane apparatus. 4,552,539, Cl. 441-66.000.
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Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,552,524, Cl. 425-406.000.
Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, to Beiersdorf Aktiengesellschaft. Dressing material based on a hydrogel, and a process for its production. 4,552,138, Cl. 128-156.000.
Hoffman, Allan; and Benford, Harry, to Ohio Medical Research, Inc. Ventilator system having a control valve in the ventilator circuit. 4,552,142, Cl. 128-207.160.
Hoffman, Michael K., to Plastic Profiles, Inc. Friction brake for a vertical sliding window. 4,551,881, Cl. 16-199.000.
Hoffmann, Wolfgang; and West, Michael, to B & H Manufacturing Company. System for computer controlled labeling machine. 4,552,608, Cl. 156-351.000.
Hoffmeister, Friedrich: *See—*
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.
Hoga, Hiroshi, to Oki Electric Industry Co., Ltd. Method of manufacturing a semiconductor substrate having dielectric regions. 4,552,595, Cl. 148-1.500.
Hogsett, Robert F.: *See—*
Duyvesteyn, Willem P. C.; and Hogsett, Robert F., 4,552,629, Cl. 204-55.00R.
Holladay, Thomas M.; and Holt, L. Bayles, to Xerox Corporation. Tile encoding in image printing. 4,553,171, Cl. 358-263.000.
Holmgren, Nils V.: *See—*
Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., 4,553,008, Cl. 200-148.00R.
Holstein & Kappert GmbH: *See—*
Brakelmann, Wolfgang, 4,552,167, Cl. 137-15.000.

Holt, Dewey L., to R. J. Reynolds Tobacco Company. String remover. 4,551,897, Cl. 29-235.000.

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Holladay, Thomas M.; and Holt, L. Bayles, 4,553,171, Cl. 358-263.000.

Holt, William, to Alarm Accessory Ltd. Electrical alarm system for installation in a window casing. 4,553,134, Cl. 340-545.000.

Homac Mfg. Company: *See*—
Larsen, Howard M., 4,552,609, Cl. 156-358.000.

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Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, 4,552,715, Cl. 264-309.000.
Atarashi, Kazuya, 4,552,399, Cl. 296-37.120.
Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, 4,552,414, Cl. 303-115.000.
Hattori, Torao, 4,552,548, Cl. 474-201.000.
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Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, 4,552,373, Cl. 280-276.000.

Honeywell Inc.: *See*—
Belt, Ronald A.; and Joseph, James D., 4,553,260, Cl. 382-22.000.
Lo, Saukwan; and Borken, Richard J., 4,553,032, Cl. 250-339.000.
Olsen, Arthur M., 4,553,104, Cl. 330-129.000.

Honeywell Information Systems Inc.: *See*—
Ong, Richard H.; and Economopoulos, Peter C., 4,553,053, Cl. 307-530.000.
Pollack, Frank S., Jr., 4,553,201, Cl. 364-200.000.

Hong, Sun-Nan: *See*—
Spector, Marshall L.; and Hong, Sun-Nan, 4,552,663, Cl. 210-605.000.

Honma, Tsunetoshi: *See*—
Igarashi, Kikuo; and Honma, Tsunetoshi, 4,552,695, Cl. 260-239.30B.

Honoshowsky, John C. Oil return apparatus for a refrigeration system. 4,551,990, Cl. 62-468.000.

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Hafele, Robert X., 4,552,526, Cl. 425-522.000.

Hopkins, Thomas R., to Lubrizol Corporation, The. Copper salts of succinic anhydride derivatives. 4,552,677, Cl. 252-33.600.

Hoppe, Joachim; and Haghiri-Tehrani, Yahya, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card having an IC module. 4,552,383, Cl. 283-83.000.

Hopper, Willard C., Jr. Bicycle sealed bearing kit. 4,552,468, Cl. 384-458.000.

Horais, Brian J.; and Kocur, Joseph S., to United Technologies Corporation. Two-piece despin obturator. 4,552,071, Cl. 102-527.000.

Horeschi, Giancarlo; and Barozzi, Gian P., to Tokyo Juki Industrial Co., Ltd. Backspace device in typewriter. 4,552,474, Cl. 400-310.000.

Horikoshi, Yukio: *See*—
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,551,896, Cl. 29-156.40R.

Horinouchi, Atsushi: *See*—
Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, 4,553,011, Cl. 219-10.55B.

Hornig, Joachim: *See*—
Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, 4,552,138, Cl. 128-156.000.

Horodysky, Andrew G., to Mobil Oil Corporation. N-Hydrocarbylhydrocarbylenediamine carboxylate and lubricants containing same. 4,552,569, Cl. 44-71.000.

Horstmann, Harald: *See*—
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.

Horvath, Aniko : *See*—
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Hoshi, Yoshikazu: *See*—
Sano, Yukinori; Hoshi, Yoshikazu; and Takahashi, Ikuo, 4,552,114, Cl. 123-481.000.

Hosokawa, Motoyuki: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.

Hotta, Nobuyuki, to Kioritz Corporation. Air cleaner. 4,552,574, Cl. 55-501.000.

Houdard, Charles; and Le Parquier, Guy, to LMT-Radio Professionnelle. Ground surveillance Doppler radar. 4,553,144, Cl. 343-7.700.

Houlden, Stephen: *See*—
Bugg, John W. J.; and Houlden, Stephen, 4,552,202, Cl. 164-528.000.

Houston, Reagan. Furnace. 4,552,305, Cl. 237-69.000.

How, Thien V., to Ethicon Inc.; and University of Liverpool, The. Synthetic vascular grafts, and methods of manufacturing such grafts. 4,552,707, Cl. 264-24.000.

Howa Kogyo Kabushiki Kaisha: *See*—
Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, 4,551,969, Cl. 57-264.000.

Howerton, Anderson W., to Dayco Corporation. Belt construction, transverse belt element therefor and method of making the same. 4,552,550, Cl. 474-242.000.

Howmedica, Inc.: *See*—
Kenna, Robert V., 4,552,136, Cl. 128-92.00E.

Hrusch, Louis C., to Pneumo Corporation. Landing gear mechanism for use on rough runways. 4,552,324, Cl. 244-104.0FP.

Hsiao, Cheng-kuo: *See*—
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., 4,552,822, Cl. 430-59.000.

Hsieh, Martin Y., to GTE Products Corporation. Formation of yttrium aluminate as sintering aid for silicon nitride bodies. 4,552,851, Cl. 501-98.000.

Huang, Chung-I. Laminated padlock. 4,551,997, Cl. 70-38.00A.

Huang, Jen-chi: *See*—
Eklund, Nils; and Huang, Jen-chi, 4,552,827, Cl. 430-160.000.

Hubble, Fred F., III; and Martin, James P., to Xerox Corporation. Infrared reflectance densitometer. 4,553,033, Cl. 250-353.000.

Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, to Daimler-Benz Aktiengesellschaft. Installation for the supply of several similar elements with a medium under atmospheric excess pressure. 4,552,402, Cl. 297-284.000.

Hubig, Markus: *See*—
Hein, Karl; Hubig, Markus; and Seroka, Helmut, 4,552,342, Cl. 266-175.000.

Hubner, Klemens: *See*—
Sarnezki, Herbert; and Hubner, Klemens, 4,552,418, Cl. 312-242.000.

Huffman, Walter K.: *See*—
Grunert, Kurt A.; and Huffman, Walter K., 4,553,115, Cl. 335-14.000.

Huggins, Dale K.: *See*—
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.

Huggitt Packaging Company: *See*—
Winchell, Jack W., 4,552,789, Cl. 428-132.000.

Hughes Aircraft Company: *See*—
Amboss, Kurt, 4,553,064, Cl. 313-448.000.
Glaser, Michael S.; and Rochester, James R., 4,552,454, Cl. 356-5.000.
Nesler, John J., 4,553,082, Cl. 323-288.000.

Hugues, Francois: *See*—
Ozin, Geoffrey A.; Nazar, Linda F.; and Hugues, Francois, 4,552,855, Cl. 502-74.000.

Hulls, Leonard R., to Numonics Corporation. Absolute position coordinate determining device employing a single phase difference measurement to determine cursor position. 4,552,991, Cl. 178-19.000.

Hunter, Burnis L., to Sewell Plastics, Inc. Nozzle assembly. 4,552,527, Cl. 425-535.000.

Hunter Douglas International N.V.: *See*—
Vecchiarelli, Francis, 4,552,196, Cl. 160-174.000.

Huntley, James B., to 2JT, Inc. Portable cordless phone holder. 4,552,995, Cl. 179-147.000.

Hurley, James R.: *See*—
Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., 4,552,123, Cl. 126-369.000.

Hurst, Robert N., Jr.; and Dischert, Robert A., to RCA Corporation. Apparatus for correcting errors in color signal transitions. 4,553,157, Cl. 358-27.000.

Hussain, Zahera J.; and Zukoski, Ronald D., to Avon Products, Inc. Transparent fragrance emitting articles. 4,552,693, Cl. 252-522.00A.

Hussey, Selby D.: *See*—
Cowley, John J.; and Hussey, Selby D., 4,552,140, Cl. 128-201.250.

Hyatt, Gilbert P. Communication system. 4,553,213, Cl. 364-514.000.

Hyatt, Gilbert P. Digital filtering system. 4,553,221, Cl. 364-724.000.

Hyatt, James R., to Nicolet Instrument Corporation. Digital data acquisition apparatus. 4,553,109, Cl. 331-25.000.

Hydraudyne B.V.: *See*—
Werners, Theo F. H.; and Drenth, Berend W., 4,552,339, Cl. 254-277.000.

Hydril Company: *See*—
Wong, Fred S.; and Grohman, Larry F., 4,552,219, Cl. 166-321.000.

Hyland, Craig R.: *See*—
Radford, Steven R.; and Hyland, Craig R., 4,552,229, Cl. 175-240.000.

Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Automobile speed control system. 4,553,209, Cl. 364-431.070.

Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, to Aquafine Corporation. Fluidization process for removing total reduced sulfur compounds from industrial gases. 4,552,734, Cl. 423-230.000.

Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., to Aquafine Corporation. Process for removing total reduced sulfur compounds from industrial gases using manganese dioxide. 4,552,735, Cl. 423-224.000.

Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, to Nippon Steel Corporation. Grain-oriented electromagnetic steel sheet with improved watt loss. 4,552,596, Cl. 148-31.500.

ICI Americas Inc.: *See*—
Bare, Thomas M., 4,552,883, Cl. 514-303.000.

Igarashi, Kikuo; and Honma, Tsunetoshi, to Shionogi & Co., Ltd. Process for production of diltiazem hydrochloride. 4,552,695, Cl. 260-239.30B.

Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, to Toppan Printing Co., Ltd. Method for returning a movable part to the original point. 4,553,079, Cl. 318-626.000.

Igarashi, Taizo; Higuchi, Hisao; and Yamazaki, Shingo, to Nippon Oil and Fats Co., Ltd. Method for preparing coal-water slurry. 4,552,568, Cl. 44-51.000.

Iida, Atsuo: *See—*
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Iida, Giichi: *See—*
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Iida, Shinobu: *See—*
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.

Iino, Kimio: *See—*
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Ikebata, Tetsuo: *See—*
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, 4,553,019, Cl. 219-146.220.

Ikeda, Kazushige: *See—*
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

Ikeda, Masafumi: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.

Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, to AMP Incorporated. Wire processing apparatus. 4,551,893, Cl. 29-33.00M.

Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, to Mitsubishi Gas Chemical Company, Inc. Electrically conductive resin composition. 4,552,690, Cl. 252-512.000.

Ikekawa, Nobuo: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

Illinois Tool Works Inc.: *See—*
Beecher, William H., 4,551,888, Cl. 24-30.50P.

Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for polymerization of olefins. 4,552,858, Cl. 502-112.000.

Imamura, Tsuyoshi: *See—*
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.

Imanishi, Kiyokazu: *See—*
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.

Imbert, Michel: *See—*
Douziech, Patrick; and Imbert, Michel, 4,553,156, Cl. 358-24.000.

Imperial Chemical Industries Limited: *See—*
Addleman, Robert L., 4,553,017, Cl. 219-121.0LA.

Imperial Chemical Industries PLC: *See—*
Kay, Ian T.; and Noon, Robert A., 4,552,887, Cl. 514-381.000.
Nicks, Peter F.; and Young, Gillian A., 4,552,908, Cl. 523-504.000.
Williams, Ian G., 4,552,912, Cl. 524-100.000.

Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James R., to Westinghouse Electric Corp. Method and apparatus for on-line monitoring of the operation of a complex non-linear process control system. 4,552,718, Cl. 376-216.000.

Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, to Ono Pharmaceutical Co., Ltd. Long-lasting multi-layered film preparation. 4,552,751, Cl. 424-19.000.

Inaba, Naomi: *See—*
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Inaba, Ritsuo: *See—*
Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,553,099, Cl. 324-458.000.

Inagaki, Nobuo: *See—*
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.

Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, to Victor Company of Japan Ltd. Automatic recording bias current setting apparatus. 4,553,179, Cl. 360-66.000.

Industrial Sheet Metal & Mechanical Corp.: *See—*
Fisher, Gary H.; and Padgett, H. Pat, 4,552,303, Cl. 236-44.00C.

Inno-Tech Developments Ltd.: *See—*
Ducharme, Marcel, 4,552,766, Cl. 426-294.000.

Inoue, Ayumu: *See—*
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, 4,552,703, Cl. 260-466.000.

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Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, to Mitsui Toatsu Chemicals, Inc. 2-Fluoroethoxy-substituted benzene derivatives. 4,552,894, Cl. 514-464.000.

Inouye, Shigeharu: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
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Institut Francais du Petrole: *See—*
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.
Ecomard, Andre , 4,552,169, Cl. 137-115.000.

Institut Pasteur: *See—*
Relyveld, Edgar H.; and Henocq, Emile, 4,552,756, Cl. 424-88.000.

Insul Company, Inc.: *See—*
Labate, Michael D.; and Perri, Joseph A., 4,552,343, Cl. 266-200.000.

Intel Corporation: *See—*
Patterson, Elizabeth L., 4,551,910, Cl. 29-576.00W.

International Business Machines Corporation: *See—*
Adams, Gary E.; Casper, John M.; and Gritter, Roy J., 4,552,723, Cl. 422-66.000.
Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., 4,552,615, Cl. 158-659.100.
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., 4,553,192, Cl. 361-395.000.
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.
Chainer, Timothy J.; and Worthington, Thomas K., 4,553,258, Cl. 382-3.000.
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Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., 4,552,787, Cl. 427-304.000.
Dewey, Anthony G., 4,552,441, Cl. 353-31.000.
Dillinger, Thomas E.; and Kueper, Terrance W., 4,553,047, Cl. 307-297.000.
Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, 4,553,050, Cl. 307-443.000.
Franey, Terence E., 4,552,634, Cl. 204-159.230.
Habich, Adolph B., 4,552,716, Cl. 264-328.100.
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.
Liu, Cheng-Yih, 4,552,831, Cl. 430-296.000.
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.00S.
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.
Pilost, Daniel, 4,553,128, Cl. 340-347.0AD.
Reed, Todd R., 4,553,248, Cl. 375-14.000.
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., 4,552,710, Cl. 264-64.000.
Trufyn, Nicholas, 4,553,202, Cl. 364-200.000.
Tsukamoto, Katsura, 4,552,351, Cl. 271-3.100.

International Flavors & Fragrances Inc.: *See—*
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,552,770, Cl. 426-535.000.

International Harvester Company: *See—*
Risley, John R., 4,552,398, Cl. 303-7.000.

International Octrooi Maatschappij "Octropa" B.V.: *See—*
Davis, Paul J.; and Reynolds, James F., 4,552,759, Cl. 424-93.000.

International Playtex, Inc.: *See—*
Patel, Shantilal G.; and Bell, William D., 4,551,892, Cl. 28-166.000.

International Standard Electric Corporation: *See—*
Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., 4,553,233, Cl. 370-16.000.

International Telephone and Telegraph Corporation: *See—*
Getz, Stephen; and Fouser, William, 4,551,875, Cl. 7-138.000.
Landgreen, Eleanor A., 4,552,427, Cl. 339-89.00M.

Inuzuka, Tsuneki: *See—*
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.

Invertron Simulated Systems Limited: *See—*
Walmsley, Dennis A., 4,552,533, Cl. 434-12.000.

Iolab Corporation: *See—*
Akhavi, David S., 4,551,864, Cl. 623-6.000.
Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., 4,551,949, Cl. 51-164.100.

Iowa State University Research Foundation, Inc.: *See—*
Bremner, John M., 4,552,581, Cl. 71-61.000.

Irvin Industries Inc.: *See—*
Gavagan, James A.; and Motyka, Jerry, 4,552,319, Cl. 242-107.40A.

Ise Kagaku Kogyo Kabushiki Kaisha: *See—*
Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, 4,552,566, Cl. 23-313.00R.

Ishibashi, Kazuhisa: *See—*
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, 4,552,605, Cl. 156-273.300.

Ishihara, Koji: *See—*
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, 4,553,019, Cl. 219-146.220.

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Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, to Aisin Seiki Kabushiki Kaisha. Method of fabricating piston by welding. 4,553,015, Cl. 219-121.0ED.

Ishii, Tutomu: *See*—
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.
Ishii, Yutaka: *See*—
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, 4,552,436, Cl. 350-337.000.
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Benzoheterocyclic compounds and pharmaceutical composition thereof. 4,552,879, Cl. 514-253.000.
Ishikawa, Nobuo; and Takaoka, Akio, to Daikin Industries Ltd. Fluorinated benzodiazepins. 4,552,694, Cl. 260-239.0BD.
Ishikawa, Noritoki, to Ryobi Ltd. Device for controlling the tension of a transmission chain in an externally mounted speed changer for a bicycle. 4,552,546, Cl. 474-82.000.
Ishikawa, Yoshimi: *See*—
Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, 4,552,373, Cl. 280-276.000.
Iso, Tadashi: *See*—
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,969, Cl. 548-179.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for preparation of ethanol. 4,552,986, Cl. 568-902.000.
Israel Aircraft Industries, Ltd.: *See*—
Bar-Nefy, Simcha; and Tiomkin, Michael V., 4,552,053, Cl. 89-1.130.
Grynberg, Ami; and Ronen, Ya'Acov, 4,553,135, Cl. 340-564.000.
Issa, Darrell E. Battery lock anti-theft system. 4,553,127, Cl. 340-64.000.
Itakura, Kohei: *See*—
Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, 4,552,566, Cl. 23-313.00R.
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., to International Business Machines Corporation. Radiation sensitive and oxygen plasma developable resist. 4,552,833, Cl. 430-325.000.
Ito, Kenzo: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, to Toyo Seikan Kaisha Limited. Utilizing particulate adhesive for laminating plastic film to the surface of metal. 4,552,605, Cl. 156-273.300.
Itoh, Shinji; and Moroji, Takashi, to Shionogi & Co., Ltd. Psychotropic drugs. 4,552,865, Cl. 514-15.000.
Itoh, Takashi: *See*—
Yamazaki, Yoshio; and Itoh, Takashi, 4,552,451, Cl. 355-15.000.
ITT Corporation: *See*—
Carl, Louis C.; and Nevadunsky, Charles J., 4,552,174, Cl. 137-527.200.
Sonderegger, Henry R.; and Chatterley, Charles, 4,552,332, Cl. 251-148.000.
ITT Industries, Inc.: *See*—
Burgdorf, Jochen; and Stoka, Roberto, 4,552,253, Cl. 188-73.380.
Sauer, Wolfgang, 4,553,163, Cl. 358-158.000.
Iuchi, Tohru: *See*—
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.
Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Heat-resisting aromatic polyester and process for preparing the same. 4,552,947, Cl. 528-126.000.
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, to Sharp Kabushiki Kaisha. Lens positioning mechanism for a copying machine. 4,552,453, Cl. 355-57.000.
Iwamoto, Yoshio: *See*—
Murakami, Katsuhiko; and Iwamoto, Yoshio, 4,552,262, Cl. 198-447.000.
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, to Santen Pharmaceutical Co., Ltd. 3-Alkanoyl benzothiazoline compounds useful for treating cardiovascular disease. 4,552,969, Cl. 548-179.000.
Iwao, Jun-ichi: *See*—
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.
Iwasaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. Low profile direct current motor. 4,553,058, Cl. 310-268.000.
J. F. Werz, Jr. KG, Werzalit-Pressholzwerk: *See*—
Munk, Edmund; and Dietz, Martin, 4,552,797, Cl. 428-167.000.
J. I. Case Company: *See*—
Chatterjea, Probir K., 4,552,168, Cl. 137-101.000.
J. T. Baker Chemical Co.: *See*—
Kruger, Paul J., 4,552,582, Cl. 71-73.000.
Jaber, Khalil N.: *See*—
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,552,809, Cl. 428-331.000.
Jackson, Frank W., to Jackson, Frank W. Exercise S-T segment evaluator. 4,552,156, Cl. 128-703.000.
Jackson, Mark F.: *See*—
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,551,916, Cl. 30-50.000.
Jacobson, Wayne M.; and Quaintance, Roger L., to Cyclonaire Corporation. Vehicular mobile high capacity pneumatic conveyor. 4,552,489, Cl. 406-39.000.
Jacquemet, Georges, to MARTELEC Societe Civile Particuliere. Method of and apparatus for the autosynchronization of an electromagnetic hammer. 4,553,074, Cl. 318-130.000.
Jacquin, Yves: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,552,650, Cl. 208-216.0PP.
Jagenberg AG: *See*—
Dropczynski, Hartmut; and Trilling, Peter, 4,552,316, Cl. 242-56.00R.
Jahn, Hans-Georg, to Heidelberger Druckmaschinen AG. Smear-free transfer cylinder for sheet-fed rotary printing machines. 4,552,069, Cl. 101-420.000.
Jamak, Inc.: *See*—
Cavicchioli, A. G., 4,552,713, Cl. 264-162.000.
James Chemical Engineering Inc.: *See*—
Stokes, Keith J., 4,552,979, Cl. 564-69.000.
James Hamilton & Sons (Engineering) Ltd.: *See*—
Wilson, Robert H.; and Wilson, Andrew J., 4,552,190, Cl. 141-82.000.
James River-Norwalk, Inc.: *See*—
Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., 4,553,010, Cl. 219-10.55E.
Jameson, Calvin R.; and Baker, Robert G., to Nordson Corporation. Thermally insulated electrically heated hose for transmitting hot liquids. 4,553,023, Cl. 219-301.000.
Japan Atomic Energy Research Institute: *See*—
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.
Japan Immunoresearch Laboratories Co., Ltd.: *See*—
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.
Japan Steel Works, Ltd., The: *See*—
Fujimori, Eiichi, 4,552,863, Cl. 502-418.000.
Jarmuzewski, Hans-Georg, to Deutsche Babcock Werke Aktiengesellschaft. Steam generator with a stationary fluidized-bed hearth. 4,552,097, Cl. 122-4.00D.
Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, to Etablissements Nativelle S.A. 14-Amino steroid derivatives, a process for the preparation thereof and method of use thereof. 4,552,868, Cl. 514-26.000.
Jencks, Charles L.: *See*—
Castonguay, Roger N.; and Jencks, Charles L., 4,553,119, Cl. 335-147.000.
Jenczewski, Theodore J.; and Skinner, William H., Jr., to Allied Corporation. Electrodialytic methods for removal of sulfur oxides from waste gases. 4,552,635, Cl. 204-182.400.
Jensen, Ronald P.; and Allcroft, Arthur N., to Myocur, Inc. Disposable ophthalmic instrument for performing radial keratotomy on the cornea. 4,552,146, Cl. 128-305.000.
Jeol Ltd.: *See*—
Matsuda, Hisashi, 4,553,029, Cl. 250-296.000.
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.
Jessop, Harvey A., deceased: *See*—
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.
Jidosha Kiki Co., Ltd.: *See*—
Takeshima, Sadao; and Ohe, Takeshi, 4,552,240, Cl. 180-142.000.
Johannesson, Lennart. Divided milling cutters. 4,552,496, Cl. 409-209.000.
Johansson, Karl H.; and Severinsson, Anders S., to Telefonaktiebolaget LM Ericsson. Method and apparatus for functionally testing a laser rangefinder. 4,552,455, Cl. 356-5.000.
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Duocracking process for the production of olefins from both heavy and light hydrocarbons. 4,552,644, Cl. 208-78.000.
Johnson, Axel R.: *See*—
Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., 4,552,645, Cl. 208-80.000.
Johnson, D. Dale, to Ex-Cell-O Corporation. Barrier fluid sealed piston for road wheel suspension. 4,552,344, Cl. 267-64.110.
Johnson, Earl H.: *See*—
Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., 4,552,685, Cl. 252-355.000.
Johnson, Gerald E., to Lamb Technicon Corp. Vertical workpiece cleanser and dryer. 4,551,880, Cl. 15-302.000.
Johnson & Johnson: *See*—
Weissenburger, Edward, 4,552,266, Cl. 206-220.000.
Johnson, Larry, to Lawrence Brothers, Inc. Horse stall construction. 4,552,094, Cl. 119-27.000.
Johnson, Lloyd D., to Standard-Knapp, Inc. Packing case tab slitter. 4,551,964, Cl. 53-374.000.
Johnson, Marion: *See*—
Murley, Jackie D.; and Johnson, Marion, 4,552,717, Cl. 264-549.000.
Johnson, Philip A.; and McCarthy, Alfred F., to Aavid Engineering, Inc. Heat sinks for integrated circuit modules. 4,552,206, Cl. 165-80.300.

Johnson, Robert A.: *See—*
Domino, William J.; Havens, Donald P.; and Johnson, Robert A., 4,553,060, Cl. 310-333.000.
Johnson, Thomas M.: *See—*
Yudelson, Joseph S.; and Johnson, Thomas M., 4,552,848, Cl. 436-86.000.
Jolidon, Synese: *See—*
Tenud, Leander; and Jolidon, Synese, 4,552,983, Cl. 564-200.000.
Jones, Brian D. Oil well evacuation system. 4,552,220, Cl. 166-369.000.
Jones, Daniel T. Scooterboard. 4,552,372, Cl. 280-87.04R.
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., to USV Pharmaceutical Corp. Bisbenzoxazines and pharmaceutical use. 4,552,876, Cl. 514-234.000.
Jones, Robert W.: *See—*
Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., 4,553,244, Cl. 372-95.000.
Jones, Thomas J.: *See—*
Szuminski, Gary F.; and Jones, Thomas J., 4,552,309, Cl. 239-265.190.
Joseph, James D.: *See—*
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Jourdan, Donovan K.: *See—*
Baltz, Gene F.; and Jourdan, Donovan K., 4,552,103, Cl. 123-186.000.
Joyce, Hardin, Jr., to Fiatallis North America, Inc. Tractor scraper hitch steering and suspension system. 4,552,238, Cl. 180-139.000.
Juhasz, Andras: *See—*
Owen, William R.; and Juhasz, Andras, 4,552,280, Cl. 220-1.00T.
Julian, Jere C.; Fogle, Ozzie; and Helms, Roseann S., to Champion International Corporation. Decorative laminated wall panel and process for making same. 4,552,792, Cl. 428-40.000.
Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brustle, Klaus, 4,551,883, Cl. 16-370.000.
Jung, Hans-Ulrich: *See—*
Schnelle, Eberhard; Jung, Hans-Ulrich; and Hetzel, Werner, 4,552,346, Cl. 269-322.000.
Junker, Warren R.: *See—*
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Justrite Manufacturing Company: *See—*
Flider, Frank S., 4,552,288, Cl. 222-482.000.
K. Bratschi, Silent Gliss: *See—*
Durig, Heinz; Grutzner, Hans; and Bratschi, Konrad, 4,552,195, Cl. 160-168.00R.
K. J. Law Engineers, Inc.: *See—*
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Kabushiki Kaisha Dunlop Home Products: *See—*
Tatsuki, Tokuji, 4,552,149, Cl. 128-402.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Mikami, Yoshiharu, 4,552,236, Cl. 177-25.000.
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Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, 4,552,009, Cl. 72-316.000.
Kabushiki Kaisha Meidensha: *See—*
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Kabushiki Kaisha Nagahori: *See—*
Nagahori, Morihiro, 4,551,993, Cl. 63-31.000.
Kabushiki Kaisha Sato: *See—*
Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, 4,552,610, Cl. 156-384.000.
Kabushiki Kaisha Toshiba: *See—*
Yamamoto, Masao; and Fujiwara, Tetsuo, 4,551,975, Cl. 60-528.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, 4,552,806, Cl. 428-312.600.
Sato, Shigeyuki; and Matsushita, Mitsumasa, 4,552,907, Cl. 523-455.000.
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Patterson, Ann D.; and Kachel, Wayne M., 4,552,649, Cl. 208-127.000.
Kadooka, Katsuyuki: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, to Dow Chemical Company, The. Rigid thermoplastic resin foam and process for preparation thereof. 4,552,904, Cl. 521-145.000.
Kaetsu, Isao: *See—*
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.
Kagabu, Shinzo: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.
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Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., 4,552,148, Cl. 128-334.00C.
Kahn, Marvin L.; and Lynch, Robert J., to Rich Products Corporation. Freezer stable whipped ice cream and milk shake food products. 4,552,773, Cl. 426-564.000.
Kaito, Haruyuki: *See—*
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,551,996, Cl. 68-20.000.
Kajino, Isao: *See—*
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Kali-Chemie Pharma GmbH: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,552,877, Cl. 514-239.000.
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Kameyama, Shuichi: *See—*
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Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, to Mitsui-Nisso Corporation. Process for preparing thermally stable super-soft polyurethane elastomer. 4,552,944, Cl. 528-55.000.
Kamochi, Atsumi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.
Kanai, Takao, to Toyota Jidosha Kabushiki Kaisha. Shift lever device. 4,552,032, Cl. 74-473.00R.
Kanaoka, Matao: *See—*
Nishizawa, Yoshito, deceased; and Kanaoka, Matao, 4,552,975, Cl. 560-163.000.
Kanayama, Masakatsu: *See—*
Hayashi, Chikahisa; and Kanayama, Masakatsu, 4,553,212, Cl. 364-507.000.
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, to Mazda Motor Corporation. Four-wheel steering device for vehicle. 4,552,239, Cl. 180-140.000.
Kandori, Toshio: *See—*
Hayashi, Hiroaki; Kandori, Toshio; and Fukushima, Yoshiaki, 4,552,806, Cl. 428-312.600.
Kaneda, Kazuji: *See—*
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, 4,552,947, Cl. 528-126.000.
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, to Kabushiki Kaisha Kobe Seiko Sho. Upsetter. 4,552,009, Cl. 72-316.000.
Kaneko, Takushi: *See—*
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,552,971, Cl. 549-332.000.
Kanerva, Heikki, to Philips Medical Systems. Regulating and stabilizing circuit for X-ray source. 4,553,255, Cl. 378-110.000.
Kanno, Tetuo: *See—*
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Kano, Masanobu: *See—*
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.
Karasaki, Toshihiko: *See—*
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, 4,552,445, Cl. 354-406.000.
Karbowniczek, Stanley: *See—*
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, to Siemens Aktiengesellschaft. Installation for destination adjustment of destination identification marks for receptacles. 4,552,072, Cl. 104-88.000.
Kariyama, Kenji: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.
Karl Meinig KG: *See—*
Meinig, Manfred, 4,552,388, Cl. 285-363.000.
Karmann, Werner: *See—*
Hofeditz, Wolfgang; Hornig, Joachim; and Karmann, Werner, 4,552,138, Cl. 128-156.000.
Kartenbeck, Jurgen, to Deutsches Krebsforschungszentrum Stiftung Des Offentichen Rechts. Electrophoretic apparatus for the quantitative elution of proteins or polypeptides from a gel. 4,552,640, Cl. 204-301.000.
Karustis, George A.: *See—*
Wilcox, Jeannine; and Karustis, George A., 4,552,628, Cl. 204-47.000.
Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Electrostatic voltage sensor. 4,553,099, Cl. 324-458.000.
Kasama, Yasuo: *See—*
Nakamura, Taku; and Kasama, Yasuo, 4,552,835, Cl. 430-523.000.
Kaschak, Ronald A.: *See—*
Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., 4,552,787, Cl. 427-304.000.
Kase, Kiyoshi; and Fukuta, Masaru, to Motorola, Inc. Power on reset circuit for microprocessor. 4,553,054, Cl. 307-597.000.
Kashiwaba, Tadao: *See—*
Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, 4,552,610, Cl. 156-384.000.
Kashiwabara, Akihiko, to Soshin Onkyo Works, Ltd. Coaxial type composite loudspeaker. 4,552,242, Cl. 181-144.000.
Kasper, Frank S.: *See—*
Wallace, Gary L.; and Kasper, Frank S., 4,552,048, Cl. 83-23.000.

Katada, Hirosi: *See*—
Yoshida, Tatsuya; and Katada, Hirosi, 4,552,110, Cl. 123-416.000.
Katahira, Shunsuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Driving circuit for an electrostatic recording head. 4,553,150, Cl. 346-154.000.
Kato, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable-length encoding-decoding system. 4,553,130, Cl. 340-347.0DD.
Katsuda, Morihiko: *See*—
Masuda, Shigeo; and Katsuda, Morihiko, 4,552,599, Cl. 156-50.000.
Katz, Michael; Hinden, Jean; and Gauger, Jurgen, to ELTECH Systems Corporation. Cathode coating with hydrogen-evolution catalyst and semi-conducting polymer. 4,552,857, Cl. 502-101.000.
Kaufhold, Horst T.: *See*—
Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., 4,552,074, Cl. 105-224.100.
Kauppi, Peter K., to New Fibers International Inc. Pulping process pretreatment using a lower alkanolamine in the presence of ammonium hydroxide. 4,552,616, Cl. 162-19.000.
Kawabata, Kenji; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition. 4,552,853, Cl. 501-134.000.
Kawabe, Kenji: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.
Kawachi, Shoji: *See*—
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.
Kawada, Shoiti: *See*—
Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, 4,552,179, Cl. 137-625.650.
Kawaei Co., Ltd.: *See*—
Kawaguchi, Mamoru, 4,552,133, Cl. 128-44.000.
Kawaguchi, Mamoru, to Kawaei Co., Ltd. Rapid exhaust valve for use in blood circulation stimulator. 4,552,133, Cl. 128-44.000.
Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, to Honda Giken Kogyo Kabushiki Kaisha. Front wheel suspension system for motorcycle or the like. 4,552,373, Cl. 280-276.000.
Kawahara, Kazuto, to Teraoka Seiko Co., Ltd. Weighing and packing apparatus. 4,551,962, Cl. 53-131.000.
Kawaharazuka, Yukio; and Iida, Giichi, to Kioritz Corporation. Throttle lever device of power-driven backpack type machine. 4,552,100, Cl. 123-2.000.
Kawai, Hiroki: *See*—
Hirano, Yutaka; and Kawai, Hiroki, 4,552,601, Cl. 156-79.000.
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, to Aisin Seiki Kabushiki Kaisha. Washing device for parts of body. 4,551,868, Cl. 4-443.000.
Kawakami, Hiroshi; and Torii, Shigeyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape drive member and manufacturing method for the same. 4,553,186, Cl. 360-130.210.
Kawamata, Yoshio: *See*—
Wakamatsu, Kazuhiro; and Kawamata, Yoshio, 4,552,449, Cl. 355-3.00R.
Kawamura, Kunio: *See*—
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, 4,552,445, Cl. 354-406.000.
Kawamura, Naoto; and Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Information detecting apparatus. 4,553,036, Cl. 250-578.000.
Kawamura, Naoto, to Canon Kabushiki Kaisha. Image processing apparatus. 4,553,173, Cl. 358-283.000.
Kawamura, Takahide: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.
Kawano, Tadaaki: *See*—
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
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Kawasaki, Kikuo; and Sano, Tomomi, to Fuji Electric Co., Ltd. Vending machine with doors. 4,553,211, Cl. 364-479.000.
Kawasaki Steel Corporation: *See*—
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.
Kawata, Shoji: *See*—
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,209, Cl. 364-431.070.
Kay, Andrew F.; and Kay, David A. Programmed learning textbook. 4,552,536, Cl. 434-327.000.
Kay, David A.: *See*—
Kay, Andrew F.; and Kay, David A., 4,552,536, Cl. 434-327.000.
Kay, Ian T.; and Noon, Robert A., to Imperial Chemical Industries PLC. Biologically active amides. 4,552,887, Cl. 514-381.000.
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., to Xerox Corporation. Photoconductive devices with hydroxy containing squaraine compositions. 4,552,822, Cl. 430-59.000.
Kearley, Stephen J.: *See*—
Aubrey, David R.; and Kearley, Stephen J., 4,553,188, Cl. 361-115.000.
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, to Kali-Chemie Pharma GmbH. N_b-Quaternary derivatives of sandwicine and isosandwicine methods and intermediate products in the manufacture of their derivatives and methods of using same and pharmaceutical compositions thereof. 4,552,877, Cl. 514-239.000.
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, to Cassella Aktiengesellschaft. Copolymer, a process for its preparation and its use as a sorbent. 4,552,905, Cl. 521-149.000.
Keith, Carl D.: *See*—
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.
Keller, Reinhold: *See*—
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.
Kelly, John M. Portable apparatus for shaping glass by abrasion. 4,552,122, Cl. 125-14.000.
Kendrick, George B.: *See*—
Fields, Larry R.; and Kendrick, George B., 4,553,066, Cl. 313-580.000.
Kenley, Rodney S.: *See*—
Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., 4,552,721, Cl. 422-28.000.
Kenna, Robert V., to Howmedica, Inc. Femoral rasp. 4,552,136, Cl. 128-92.00E.
Kennedy, Roger C.: *See*—
Stevens, Glenn G.; and Kennedy, Roger C., 4,553,216, Cl. 364-558.000.
Kent-Moore Corporation: *See*—
Provost, Lawrence A., 4,551,898, Cl. 29-235.000.
Keogh, Michael J., to Union Carbide Corporation. Polysiloxanes from acyloxysilanes using organo metallic catalyst. 4,552,941, Cl. 528-16.000.
Keri, Gyorgi: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
Kernstock, John M.; Johnson, Earl H.; and Vaughn, Bertha R., to Dow Chemical Company, The. Thickened amphoteric surfactant solutions. 4,552,685, Cl. 252-355.000.
Kerr, Robert L., to Wean United, Inc. Roof assembly for an electric arc furnace. 4,553,245, Cl. 373-74.000.
Kesselman, David A. Tamper indicator. 4,552,394, Cl. 292-307.00B.
Kessels, Jozef L. W.: *See*—
Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., 4,553,234, Cl. 370-86.000.
Kettner, Roland; Liermann, Norbert; and Lubcke, Torsten. Process for the reduction of the sulfur content in a gaseous stream. 4,552,746, Cl. 423-573.00G.
Keyes, Marion A., IV: *See*—
Knudsen, James K.; and Keyes, Marion A., IV, 4,552,026, Cl. 73-861.240.
Khimanych, Anatoly P.: *See*—
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.
Kidde Consumer Durables Corp.: *See*—
Rummelsburg, Al S., 4,552,284, Cl. 220-453.000.
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical pickup. 4,553,227, Cl. 369-44.000.
Kiesling, David A.: *See*—
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.
Kikkoman Corporation: *See*—
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Kikutsugi, Masaharu: *See*—
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Kim, Choung U.; and Misco, Peter F., Jr., to Bristol-Myers Company. Carbapenem antibiotics. 4,552,696, Cl. 260-245.20T.
Kimball, Michael E.: *See*—
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.
Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., 4,552,913, Cl. 524-240.000.
Kimura, Shizuko, legal representative: *See*—
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.
Kimura, Takao; and Nagaoka, Yoshimobu, to Mitsubishi Petrochemical Co., Ltd. Method for producing crosslinked foam. 4,552,708, Cl. 264-53.000.
Kimura, Tsutomu, deceased: *See*—
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.
Kindig, Cleon V., deceased: *See*—
Kindig, Morris L.; Kindig, Cleon V., deceased; and Kindig, Eunice L., executrix, 4,551,948, Cl. 51-98.00R.
Kindig, Eunice L., executrix: *See*—
Kindig, Morris L.; Kindig, Cleon V., deceased; and Kindig, Eunice L., executrix, 4,551,948, Cl. 51-98.00R.
Kindig, Morris L.; Kindig, Cleon V., deceased; and by Kindig, Eunice L., executrix. Glass shaping machine. 4,551,948, Cl. 51-98.00R.

King, Charles L.: *See—*
Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., 4,552,603, Cl. 156-167.000.
King, David P.: *See—*
Barker, Robert I.; King, David P.; and Pawlowski, Henry A., 4,552,025, Cl. 73-846.000.
King, Derrick O.: *See—*
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,552,477, Cl. 401-188.00R.
Kington, Alan D.: *See—*
Mills, David; and Kington, Alan D., 4,552,198, Cl. 164-122.200.
Kinoshita, Kunio, to Olympus Optical Co., Ltd. Air and liquid supplying device for endoscopes. 4,552,130, Cl. 128-4.000.
Kinoshita, Takao, to Canon Kabushiki Kaisha. Image signal processing device. 4,553,167, Cl. 358-213.000.
Kinugasa, Toshiyuki: *See—*
Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, 4,552,715, Cl. 264-309.000.
Kinze Manufacturing, Inc.: *See—*
Kinzenbaw, Jon E., 4,552,375, Cl. 280-415.00R.
Kinzenbaw, Jon E., to Kinze Manufacturing, Inc. Convertible implement frame pulled lengthwise in the transport position. 4,552,375, Cl. 280-415.00R.
Kioritz Corporation: *See—*
Hotta, Nobuyuki, 4,552,574, Cl. 55-501.000.
Kawaharazuka, Yukio; and Iida, Giichi, 4,552,100, Cl. 123-2.000.
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Kirby, Jane P.: *See—*
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.
Kircher, Klaus: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.
Kirisawa, Tadashi: *See—*
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.
Kirkland, Kenneth C.: *See—*
Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., 4,552,367, Cl. 277-1.000.
Kirton, John: *See—*
Cattell, Alan F.; Kirton, John; and Lloyd, Peter, 4,552,782, Cl. 427-66.000.
Kiselewski, Donald L. Method of constructing a modular unit. 4,551,961, Cl. 52-743.000.
Kishi, Katsutoshi: *See—*
Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, 4,551,969, Cl. 57-264.000.
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, to Voest-Alpine Aktiengesellschaft. Drive arrangement for the loading arms of a loading ramp for heading machines or longwall shearing machines. 4,552,263, Cl. 198-514.000.
Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, to Ise Kagaku Kogyo Kabushiki Kaisha. Globulous products of subliming substance, its manufacturing process and manufacturing apparatus. 4,552,566, Cl. 23-313.00R.
Kitchens, Doyle W. Bass fishing organizer. 4,551,939, Cl. 43-21.200.
Kivisto, C orge M.: *See—*
Benda, Steven J.; Kivisto, George M.; and Kivisto, Paul M., 4,552,345, Cl. 269-43.000.
Kivisto, Paul M.: *See—*
Benda, Steven J.; Kivisto, George M.; and Kivisto, Paul M., 4,552,345, Cl. 269-43.000.
Klauke, Erich: *See—*
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Kleber, Heinrich: *See—*
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Klein, Wilfried. Dry-head or deluge-type valve for fire-extinguishing systems. 4,552,221, Cl. 169-22.000.
Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. JFET Reflection oscillator. 4,553,110, Cl. 331-116.0FE.
Kleiner, Walter, to Staeubli Ltd. Method and apparatus for controlling a rotation dobby. 4,552,184, Cl. 139-66.00R.
Kleiven, Atle: *See—*
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.
Klima, Frank J., to Sturm, Warren A. Rotary drill bit seal. 4,552,233, Cl. 175-371.000.
Kling, John P.: *See—*
English, James M.; Gurreri, Nicholas L.; and Kling, John P., 4,553,114, Cl. 333-182.000.
Klockner-Becorit GmbH: *See—*
Heiermann, Siegfried; and Lachner, Hans, 4,552,038, Cl. 81-57.380.
Klockner CRA Technologie GmbH: *See—*
Hein, Karl; Hubig, Markus; and Seroka, Helmut, 4,552,342, Cl. 266-175.000.
Klute, Ferdinand. Power transmission plant having pressure surfaces. 4,552,507, Cl. 415-5.000.
KMS Fusion, Inc.: *See—*
Mayer, Frederick J., 4,552,742, Cl. 423-446.000.
Kniffin, John R.: *See—*
Akhavi, David S.; Cudworth, Richard W.; and Kniffin, John R., 4,551,949, Cl. 51-164.100.
Knifton, John F.: *See—*
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Knight Manufacturing Company, Inc.: *See—*
East, David S., 4,551,940, Cl. 43-42.110.
Knoll, Peter: *See—*
Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, 4,552,437, Cl. 350-339.00R.
Knop, Charles M.: *See—*
Saad, Saad S.; and Knop, Charles M., 4,553,112, Cl. 333-21.00R.
Knorr-Bremse GmbH: *See—*
Hintner, Josef, 4,552,411, Cl. 303-37.000.
Knott, Jack E., II: *See—*
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,552,801, Cl. 428-220.000.
Knox, Lloyd C.; and Moore, Clayton A., to Halliburton Company. Grouting method - chemical method. 4,552,486, Cl. 405-227.000.
Knudsen, James K.; and Keyes, Marion A., IV, to Babcock & Wilcox Company, The. Sensor for a vortex shedding flowmeter. 4,552,026, Cl. 73-861.240.
Kobayashi, Toshio: *See—*
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Kobayashi, Yoshiro: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.
Kobs, Rolf U. D.: *See—*
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.
Koch, Karl H.: *See—*
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, 4,552,575, Cl. 62-544.000.
Koch, Manfred; and Herbrechtsmeier, Peter, to Hoechst Aktiengesellschaft. Process for the preparation of (phenoxy- or benzyl-)-phenoxy-propionic acids and their alkali metal salts. 4,552,977, Cl. 562-435.000.
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Granular, free-flowing detergent component and method for its production. 4,552,681, Cl. 252-140.000.
Kocher, Erich J.; and Kopp, John K., to Vilter Manufacturing Corporation. Ice-thickness sensing device in refrigeration system. 4,551,982, Cl. 62-130.000.
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., to Mead Corporation, The. Apparatus and method for preparing multipage, taped, side-stitched documents. 4,552,497, Cl. 412-6.000.
Kocur, Joseph S.: *See—*
Horais, Brian J.; and Kocur, Joseph S., 4,552,071, Cl. 102-527.000.
Koenck, Steven E., to Norand Corporation. Portable battery powered system. 4,553,081, Cl. 320-43.000.
Koenig, Jean-Jacques: *See—*
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Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, to Procter & Gamble Company, The. Process for high-speed production of webs of debossed and perforated thermopiastic film. 4,552,709, Cl. 264-504.000.
Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, to Howa Kogyo Kabushiki Kaisha. Apparatus for controlling the winding speed of roving in roving frame. 4,551,969, Cl. 57-264.000.
Koh-I-Noor Rapidograph, Inc.: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.
Kohl, Horst: *See—*
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Koide, Tatsushi: *See—*
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.
Koivunen, Erkki A., to General Motors Corporation. Centrifugal pressure compensator for a variable drive pulley. 4,552,545, Cl. 474-16.000.
Kojima, Shuichi, to Nissan Motor Co., Ltd. Warp let-off mechanism of weaving machine. 4,552,186, Cl. 139-100.000.
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, to Laurel Bank Machine Co., Ltd. Device for opening and closing push cover of note container box for use in automatic money depositing and disbursing machine. 4,552,354, Cl. 271-163.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.
Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, 4,553,086, Cl. 324-57.00N.
Kolecki, Ronald E., to Atlantic Richfield Company. Lubricant removal system for a cold rolling mill. 4,552,003, Cl. 72-38.000.
Komanduri, Ranga; and Reed, William R., Jr., to General Electric Company. Cutting insert with means for simultaneously removing a plurality of chips. 4,552,492, Cl. 407-114.000.
Komatsu, Toshiyuki: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.
Komatsu, Yoshimi: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.
Komuro, Katsumi: *See—*
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, to Mitsubishi Denki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Short circuiting transfer arc welding machine. 4,553,018, Cl. 219-130.510.

Kondo, Tsuneo: *See*—
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.
Konig, Raimund: *See*—
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Yamazaki, Yoshio; and Itoh, Takashi, 4,552,451, Cl. 355-15.000.
Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.
Konnemann, Alfred: *See*—
Brandstater, Manfred; and Konnemann, Alfred, 4,553,126, Cl. 338-319.000.
Kopolow, Stephen L., to Personal Products Company. Stabilized absorbent boards. 4,552,618, Cl. 162-157.100.
Kopp, John K.: *See*—
Kocher, Erich J.; and Kopp, John K., 4,551,982, Cl. 62-130.000.
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., to Eli Lilly and Company. Ascorbic acid ethers in angiogene. 4,552,888, Cl. 514-474.000.
Koppel, Gary A.; Barton, Russell L.; and Briggs, Stephen L., to Eli Lilly and Company. Furo[3,2-b]furan-2-(3H)-ones. 4,552,895, Cl. 514-470.000.
Kornfeld, Edmund C.: *See*—
Booher, Richard N.; and Kornfeld, Edmund C., 4,552,956, Cl. 544-101.000.
Kornylo, Walter P., to General Motors Corporation. Composite trim foundation panel and clip. 4,551,891, Cl. 24-669.000.
Koser, Jaroslav: *See*—
Eder, Theodor; and Koser, Jaroslav, 4,552,085, Cl. 114-84.000.
Kostorz, Jan R.: *See*—
Herring, William P.; and Kostorz, Jan R., 4,552,176, Cl. 137-625.400.
Kosubek, Uwe: *See*—
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.
Kovach, Bruce F. Rink covering structure. 4,551,985, Cl. 62-235.000.
Kovach, Stephen M.: *See*—
Hettinger, William P., Jr.; Kovach, Stephen M.; and Beck, Hubert W., 4,552,647, Cl. 208-120.000.
Kovalerchik, Vulf P.: *See*—
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.
Kowa Co., Ltd.: *See*—
Murakami, Akira; and Yoshizaki, Hideo, 4,552,760, Cl. 424-94.000.
Kowles, John W.: *See*—
Marxer, John E.; and Kowles, John W., 4,553,137, Cl. 340-582.000.
Koyama, Masaaki: *See*—
Abe, Yoshiaki; and Koyama, Masaaki, 4,552,780, Cl. 427-8.000.
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, to Sharp Kabushiki Kaisha. Liquid crystal display having uniform transmittance. 4,552,436, Cl. 350-337.000.
Kranz, Kermit W. Collapsible container construction. 4,552,271, Cl. 211-41.000.
Krempel, Ralf. Visual communication system devices. 4,552,534, Cl. 434-170.000.
Kreuzer, Franz-Heinrich; Glauberman, Gisela; and Bosch, Erhard, to Consortium fur Elektrochemische Industrie GmbH. Silanes and compositions prepared therefrom. 4,552,942, Cl. 528-34.000.
Krieger, Karl; and Reinelt, Werner, to Hermann Hemscheidt Maschinenfabrik GmbH & Co. Pressure-limiting hydraulic valve. 4,552,172, Cl. 137-484.600.
Krishnan, Sivaram: *See*—
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.
Kroetsch, Charles F., to GTE Valeron Corporation. Touch probe having nonconductive contact carriers. 4,553,001, Cl. 200-61.410.
Krueger, Duane A.; and Odorzynski, Thomas W., to American Can Company. Process for producing coextruded film of polypropylene, polypropylene blend, and nylon. 4,552,714, Cl. 264-171.000.
Kruger, Paul J., to J. T. Baker Chemical Co. Cotton defoliant compositions. 4,552,582, Cl. 71-73.000.
Krukonis, Val J.: *See*—
Berneburg, Philip L.; and Krukonis, Val J., 4,552,786, Cl. 427-249.000.
Krumkalns, Eriks V.; and Smiley, David L., to Eli Lilly and Company. Fungicidal pyridylmethyl-amines. 4,552,886, Cl. 514-342.000.
Krumkalns, Eriks V.; and Smiley, David L., to Eli Lilly and Company. Fungicidal amines. 4,552,960, Cl. 544-336.000.
Ku, Thomas W.: *See*—
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,552,893, Cl. 514-560.000.
Ku, Walter H.: *See*—
Chao, Pane-Chane; and Ku, Walter H., 4,551,905, Cl. 29-571.000.
Kuba, Jan: *See*—
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.
Kubota, Ltd.: *See*—
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.
Kubota, Tsutomu: *See*—
Goto, Jugo; and Kubota, Tsutomu, 4,552,920, Cl. 525-58.000.
Kuckens, Alexander; and Kohl, Horst, to Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co. KG. Method and an apparatus for the production and dispensing in portions of noncarbonated mixed drinks. 4,552,286, Cl. 222-145.000.
Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri , to ZVS Vyzkumnevyvojovy ustav koncernova ucelova organizace. Weft inserting device. 4,552,188, Cl. 139-435.000.
Kuehl, Ulrich: *See*—
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,552,877, Cl. 514-239.000.
Kuekes, Philip J.: *See*—
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,553,203, Cl. 364-200.000.
Kueper, Terrance W.: *See*—
Dillinger, Thomas E.; and Kueper, Terrance W., 4,553,047, Cl. 307-297.000.
Kugler, Andrew J.: *See*—
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., 4,552,153, Cl. 128-677.000.
Kuhl, Gunter H., to Mobil Oil Corporation. Method of preparing crystalline zeolite ZSM-12 and product. 4,552,739, Cl. 423-328.000.
Kuhlein, Klaus: *See*—
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.
Kuhn S.A.: *See*—
Werner, Anton, 4,552,079, Cl. 111-85.000.
Kuhn, Wilhelm; and Bunnenberg, Claus, to Gesellschaft fur Strahlen- und Umweltforschung mbH, Munchen. Method and apparatus for determining the penetration and leaching process of conductive phases. 4,553,087, Cl. 324-65.00P.
Kumagai, Shuno: *See*—
Ando, Yoshio; Kumagai, Shuno; and Kinugasa, Toshiyuki, 4,552,715, Cl. 264-309.000.
Kumagami, Naoki: *See*—
Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, 4,553,079, Cl. 318-626.000.
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, to Japan Atomic Energy Research Institute; and Japan Immunoresearch Laboratories Co., Ltd. Fine particulate for use in clinical testing and a process for producing thereof. 4,552,633, Cl. 204-159.210.
Kumokawa, Takashi: *See*—
Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, 4,553,123, Cl. 336-83.000.
Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, to UBE Industries, Ltd. Elongated non-metallic sheet having a metal embedded therein or attached thereon. 4,553,016, Cl. 219-121.0LG.
Kupcikevicius, Vytautas; and Raudys, Vytas, to Union Carbide Corporation. Method and apparatus for use in automatically and continuously making sausages with flat ends. 4,551,884, Cl. 17-49.000.
Kurata, Masami: *See*—
Moriguchi, Fujio; and Kurata, Masami, 4,553,174, Cl. 358-285.000.
Yamamoto, Tadashi; and Kurata, Masami, 4,553,160, Cl. 358-75.000.
Kurata, Shuhei: *See*—
Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, 4,551,930, Cl. 36-30.00R.
Kurland, Lawrence G.; and Gilbert, Eli. Integrated interactive restaurant communication system for food and entertainment processing. 4,553,222, Cl. 364-900.000.
Kuroha, Toshiaki: *See*—
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, to Hitachi, Ltd. Engine control apparatus. 4,552,116, Cl. 123-489.000.
Kuroki, Katsuro: *See*—
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.
Kurtis, Soma: *See*—
Wilensky, Joseph, 4,551,979, Cl. 60-648.000.
Kuusilinna, Olavi. Tree harvesting device. 4,552,191, Cl. 144-3.00D.
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, to Dr. C. Otto & Comp. G.m.b.H. Cleaning apparatus for the sealing surfaces of leveling doors and leveling door frames of battery-type coke ovens. 4,552,622, Cl. 202-241.000.
L.A. Ricouard S.A.: *See*—
Ricouard, Jacques; and Chappoux, Claude, 4,551,998, Cl. 70-69.000.
Labate, Michael D.; and Perri, Joseph A., to Insul Company, Inc. Combination electric furnace and slag retaining pouring spout. 4,552,343, Cl. 266-200.000.
Labb, Georges, to Thomson-CSF. Spatial correction device for an image analyzer. 4,553,164, Cl. 358-163.000.
Lacefield, William B.; and Pfeifer, William, to Eli Lilly and Company. Synthesis of 9-carbamoyl-9-(3-aminopropyl)fluorenes. 4,552,982, Cl. 564-164.000.
Lachner, Hans: *See*—
Heiermann, Siegfried; and Lachner, Hans, 4,552,038, Cl. 81-57.380.

Lacina, Tomislav: *See—*
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.

Lacourt, Daniel: *See—*
Couche, Leon; Lacourt, Daniel; and Ventavoli, Roger, 4,551,886, Cl. 17-75.000.

Lacy, Robert A.: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., 4,553,238, Cl. 372-6.000.

Lade, Robert W.: *See—*
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,553,151, Cl. 357-23.400.

Laferty, John M.: *See—*
McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., 4,552,749, Cl. 423-606.000.

LaFleur, Robert H. Jig-saw puzzle work board. 4,552,361, Cl. 273-157.00R.

Laiewski, Stanislaus J.; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., to W. R. Grace & Co., Cryovac Div. Method and apparatus for manufacturing a purge trap tray. 4,552,600, Cl. 156-73.100.

Laitera , Jukka, tô Oy Wartsila Ab. Suction dredger. 4,552,084, Cl. 114-74.00R.

Laitinen, Herbert A.; and Waggoner, James R. Process for preparing a platinum surface on tin oxide substrate. 4,552,641, Cl. 204-32.100.

Laitinen, Sakari; and Nyman, Tapani, to A. Ahlstrom Osakeyhtio. Thermal stabilizing system for a headbox of a papermachine. 4,552,619, Cl. 162-336.000.

Laitram Corporation, Inc.: *See—*
Lapeyre, James M., 4,552,177, Cl. 137-625.280.

Lamb Technicon Corp.: *See—*
Johnson, Gerald E., 4,551,880, Cl. 15-302.000.

Land O'Lakes, Inc.: *See—*
Gronfor, Dennis I., 4,552,774, Cl. 426-582.000.

Landgreen, Eleanor A., to International Telephone & Telegraph Corp. Self-locking connector. 4,552,427, Cl. 339-89.00M.

Landney, Michael, Jr.: *See—*
Stevenson, Richard M., 4,552,626, Cl. 204-20.000.

Landrau, Felix A.: *See—*
Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,552,561, Cl. 604-896.000.

Landsness, Clifford A., to B. F. Goodrich Company, The. High—speed splicing system for preparing ply stock. 4,552,602, Cl. 156-157.000.

Lang, Thomas J.: *See—*
Distin, Robert G., Jr.; and Lang, Thomas J., 4,552,037, Cl. 74-805.000.

Lange, Arno: *See—*
Merger, Franz; Hettinger, Peter; and Lange, Arno, 4,552,985, Cl. 568-497.000.

Lange, Peter M.: *See—*
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., 4,552,954, Cl. 536-24.000.

Langer, Heinz G., to Messerschmitt-Bolkow-Blohm GmbH. Insulating layer for solid fuel rocket engines. 4,552,070, Cl. 102-290.000.

Lapeyre, James M., to Laitram Corporation, Inc. Hermetically sealed valve. 4,552,177, Cl. 137-625.280.

Larkin, John M., to Texaco Inc. Stabilized hydrogenation catalyst and method of forming the catalyst. 4,552,862, Cl. 502-306.000.

Larner, Donald A., to Fluid Devices Ltd. Fluid-flow transducer. 4,552,027, Cl. 73-861.530.

Larsen, Howard M., to Homac Mfg. Company. Method and apparatus for friction welding. 4,552,609, Cl. 156-358.000.

Larsen, Walter L. Twin hooked clamp fastening device. 4,551,890, Cl. 24-565.000.

Larsson, Peter L., to Raychem Corporation. Method for terminating a high voltage cable. 4,551,915, Cl. 29-858.000.

Laser Corporation: *See—*
Chaffee, Edwin G., 4,553,241, Cl. 372-62.000.

LASERstore, Ltd.: *See—*
Waugh, John B. S., 4,552,322, Cl. 242-198.000.

Laska, Eugene M.: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,552,899, Cl. 514-568.000.

Lau, Philip T. S.; and Einhaus, Gary M., to Eastman Kodak Company. Enhanced bleaching of photographic elements containing silver halide and adsorbed dye. 4,552,834, Cl. 430-393.000.

Laurel Bank Machine Co., Ltd.: *See—*
Kokubo, Eiichi; Goi, Koichi; Arikawa, Junichi; Ebihara, Hideyuki; and Chiba, Hiroshi, 4,552,354, Cl. 271-163.000.

Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, to A. Nattermann & Cie GmbH. O-Alkyl-O-carbamoylglycerophosphocholines and the use for treating hypertension. 4,552,869, Cl. 514-77.000.

Lauter, Robert: *See—*
Adcock, Carson D.; and Lauter, Robert, 4,552,658, Cl. 210-169.000.

Lauterbach, Herbert G.: *See—*
Fish, Floyd H., Jr.; and Lauterbach, Herbert G., 4,552,805, Cl. 428-297.000.

Lavagnino, Edward R.: *See—*
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.

Lavery, Ormond F., personal representative: *See—*
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.

Lawrence Brothers, Inc.: *See—*
Johnson, Larry, 4,552,094, Cl. 119-27.000.

Layher, Francis W., to National Semiconductor Corporation. Ceramic semiconductor package chip prevention structure and method. 4,552,267, Cl. 206-334.000.

Leanhart, Thomas B.: *See—*
Richardson, Robert D.; and Leanhart, Thomas B., 4,552,277, Cl. 215-249.000.

Lee, Charles A.: *See—*
Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., 4,551,904, Cl. 29-571.000.

Lee, Chi-Long: *See—*
Bauman, Therese M.; and Lee, Chi-Long, 4,552,901, Cl. 521-122.000.

Lee, Chung-Yang. Modulation rule. 4,552,052, Cl. 84-473.000.

Lee, John F., to Federal Paper Board Co., Inc. Light-tight carton for X-ray and other light sensitive film. 4,552,268, Cl. 206-455.000.

Lee, John T.: *See—*
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.

Lee, Kien-yin; and Coburn, Michael D., to United States of America, Energy. Ethylenediamine salt of 5-nitrotetrazole and preparation. 4,552,598, Cl. 149-47.000.

Lee, Lester H.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.

Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., to Square D Company. Interchangeable scale meter case. 4,552,018, Cl. 73-431.000.

Legrand, Jean. Motor, clutch and gearing control. 4,552,256, Cl. 192-0.052.

Lehmann, Herbert: *See—*
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, 4,552,072, Cl. 104-88.000.

Lehmann, Wolfgang; and Aab, Hans-Walter, to Neff Gewindespindeln GmbH. Rearing arrangement for guiding a carriage in a straight line along a guide rail. 4,552,416, Cl. 308-6.00C.

Leigh-Monstevens, Keith V.: *See—*
Nix, Richard; and Leigh-Monstevens, Keith V., 4,551,976, Cl. 60-533.000.

Leitner S.p.A.: *See—*
Platter, Helmuth, 4,552,226, Cl. 172-815.000.

Leland Stanford University, The Board of Trustees of the: *See—*
Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., 4,553,238, Cl. 372-6.000.

Lenco, Inc.: *See—*
Colman, William H., 4,553,013, Cl. 219-74.000.

Lentz, Scott B.; and Dale, Howard C. Storage system for athletic equipment or the like. 4,552,270, Cl. 211-17.000.

Lenz, Herman N.: *See—*
Rogo, Casimir; and Lenz, Herman N., 4,552,308, Cl. 239-457.000.

Le Parquier, Guy: *See—*
Houdard, Charles; and Le Parquier, Guy, 4,553,144, Cl. 343-7.700.

Leschek, Walter C.: *See—*
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.

Leslie, Dale R. Shoe patch device and method of preserving and repairing shoes. 4,551,876, Cl. 12-142.00Q.

Letsch, Karl H.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Lewandowski, Willi, to Hauni-Werke Korber & Co. KG. Machine tool with detachable tool shielding means. 4,551,953, Cl. 51-268.000.

Lewiner, Jacques; and Charpak, Georges. Devices designed to measure locally the electric charges carried by dielectrics. 4,553,089, Cl. 324-71.100.

Lewis, Leon D., to Garrett Corporation, The. Engine management system. 4,551,972, Cl. 60-39.281.

Lewis, Royce C., Jr.: *See—*
Racz, Gabor B.; and Lewis, Royce C., Jr., 4,552,135, Cl. 128-78.000.

Li, Stephen: *See—*
Bissot, Thomas C.; and Li, Stephen, 4,552,631, Cl. 204-98.000.

Li, Tsung-Tee; and Marx, Michael, to Syntex (U.S.A.) Inc. [3.2.0]Bicycloheptanone oxime ethers with valuable therapeutic properties. 4,552,898, Cl. 514-561.000.

Lickei, Donald L.: *See—*
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,917, Cl. 524-590.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,943, Cl. 528-50.000.

Lid, Olav: *See—*
Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, 4,552,530, Cl. 432-192.000.

Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., to U.S. Philips Corporation. Method of bonding ceramic components together or to metallic components. 4,552,301, Cl. 228-263.120.

Liermann, Norbert: *See—*
Kettner, Roland; Liermann, Norbert; and Lubcke, Torsten, 4,552,746, Cl. 423-573.00G.

Lieske, Edgar: *See—*
Maak, Norbert; and Lieske, Edgar, 4,552,565, Cl. 8-409.000.

Limpert, Rudolf: *See—*
Clark, Raymond W.; and Limpert, Rudolf, 4,552,501, Cl. 414-486.000.
Lin Data Corporation: *See—*
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.
Lin, Jiang-Jen; and Knifton, John F., to Texaco Inc. Process for oxidative dicarbonylation of butadiene. 4,552,976, Cl. 560-204.000.
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., to Lin Data Corporation. Disc media. 4,552,820, Cl. 428-611.000.
Lindahl, Herbert S.; Barsteika, Paul V.; and Werner, Daniel P., to Gulf & Western Manufacturing Company. Oil equalization system for refrigeration compressors. 4,551,989, Cl. 62-468.000.
Lindberg, Albert W., Jr. Swimming pool ladder securement device. 4,552,245, Cl. 182-97.000.
Lindgren, Per, to Company PAX. Device for pushing or pulling elongate wire- or rod-shaped elements through conduits. 4,552,338, Cl. 254-134.3FT.
Linnstaedter, Don J., to GenCorp Inc. Apparatus for co-extruding a rubber strip of one material with a stripe of a second material. 4,552,521, Cl. 425-131.100.
Linse, Vonne D.: *See—*
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.
Lion Corporation: *See—*
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.
Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Ferrand, Gerard; Dumas, Herve ; Bayssat, Michel; and Depin, Jean-Claude, 4,552,878, Cl. 514-243.000.
Lipowski, Stanley A.; and Miskel, John J., Jr., to Diamond Shamrock Chemicals Company. Amphoteric water-in-oil self-inverting polymer emulsion. 4,552,670, Cl. 252-8.50C.
Lipschutz, Paul, to Neiman S.A. Steering shaft anti-theft device for motor vehicle. 4,552,000, Cl. 70-185.000.
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Reardon, Edward J.; and Lipson, Melvin A., 4,552,830, Cl. 430-281.000.
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Hill, John H.; and Lisboa, Luis S., 4,552,161, Cl. 132-88.500.
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Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., 4,552,577, Cl. 65-22.000.
Little, Philip V., to Lucas Industries. Key operated security switch to prevent unauthorized use of equipment. 4,553,006, Cl. 200-43.050.
Littleford, Philip O. Open curve, atrial "J" electrode. 4,552,157, Cl. 128-786.000.
Litwak, Alfred A.; and O'Donnell, Laurene H. Drinking fountain device and combination sink and drinking fountain device. 4,552,306, Cl. 239-29.000.
Liu, Cheng-Yih, to International Business Machines Corporation. Fabrication method for controlled via hole process. 4,552,831, Cl. 430-296.000.
Liu, Ling H. Electrical plug. 4,552,428, Cl. 339-97.00P.
Liukkonen, Mika: *See—*
Liukkonen, Vesa; and Liukkonen, Mika, 4,552,366, Cl. 277-1.000.
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Houdard, Charles; and Le Parquier, Guy, 4,553,144, Cl. 343-7.700.
Lo, Saukwan; and Borken, Richard J., to Honeywell Inc. Infrared energy gage. 4,553,032, Cl. 250-339.000.
Lockheed Corporation: *See—*
Bruensicke, Wilhelm A., 4,552,325, Cl. 244-118.500.
Lockheed Missiles & Space Co., Inc.: *See—*
Schmidt, Terrence W., 4,552,083, Cl. 114-61.000.
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Logie, Frank M., to Lucas Industries public limited company. Core structure for electromagnetic devices. 4,553,121, Cl. 335-261.000.
Longenecker, Bruce C.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
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Loomans, Maurice E.: *See—*
Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., 4,552,872, Cl. 514-175.000.
Loomis, Phillip E.: *See—*
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Loos, Jerold C.; Wakefield, James R.; and Foster, Frederick S., to Hall Systems, Inc. Programmable packaging grid for loop gripper product conveyor system. 4,552,349, Cl. 270-54.000.
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, to CPC International Inc. Flame resistant starch-sulfamate products. 4,552,918, Cl. 524-734.000.
Lorke, Horst: *See—*
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,552,678, Cl. 252-49.300.
Lottick, Edward A. Removable switch electrocautery instruments. 4,552,143, Cl. 128-303.140.
Louison, Guy, to V. Louison et Cie. Regulating device for the warp and thermo-fixing yarns of ribbons with self-gripping loops, capable of being adapted to a knitting machine. 4,551,995, Cl. 66-203.000.
Lowenfeld, Rudolf: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.
Lowne, Alan J., to Eastman Kodak Company. Compact reflectometer. 4,552,458, Cl. 356-446.000.
Lowrey, Erlend R.: *See—*
Elm, Chance R.; and Lowrey, Erlend R., 4,552,753, Cl. 424-66.000.
Lubcke, Torsten: *See—*
Kettner, Roland; Liermann, Norbert; and Lubcke, Torsten, 4,552,746, Cl. 423-573.00G.
Lubrizol Corporation, The: *See—*
Hopkins, Thomas R., 4,552,677, Cl. 252-33.600.
Lucas Industries: *See—*
Little, Philip V., 4,553,006, Cl. 200-43.050.
Lucas Industries Limited: *See—*
Williams, Malcolm, 4,552,113, Cl. 123-436.000.
Lucas Industries public limited company: *See—*
Gaskell, David J., 4,552,310, Cl. 239-533.500.
Logie, Frank M., 4,553,121, Cl. 335-261.000.
Luebrecht, Donald, to Crown Controls Corporation. Lift truck. 4,552,250, Cl. 187-9.00E.
Lufran, Inc.: *See—*
Findlay, Gordon R., 4,553,024, Cl. 219-335.000.
Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., to Exxon Research and Engineering Co. Polymer compositions based on sulfonated ionomers and amine containing polymers. 4,552,916, Cl. 524-399.000.
Lundberg, Robert D.: *See—*
Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., 4,552,939, Cl. 526-287.000.
Lunder, Tito L.; and Nielsen, Corine M., to Nestec S.A. Cold soluble tea. 4,552,769, Cl. 426-435.000.
Lundin, Lawrence R. Tricycle and a toy crane assembly removably mounted thereon. 4,552,274, Cl. 212-232.000.
Luscher, Rene , to Gretag Aktiengesellschaft. Pivoting device. 4,552,029, Cl. 74-96.000.
Luscher, Rene , to Gretag Aktiengesellschaft. Unloading device. 4,552,285, Cl. 221-13.000.
Luscombe, Terry. Hitch assembly for a tandem disc implement. 4,552,224, Cl. 172-324.000.
Luska, Zdenek, to Bobst SA. Method and device for maintaining density of a printed color constant. 4,552,165, Cl. 137-3.000.
Lustig, Claude D., to Sperry Corporation. Low cost panel display addressing structure. 4,553,143, Cl. 340-719.000.
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., to Belorussky Politekhnichesky Institut. Apparatus for thermal decomposition of polymeric materials. 4,552,621, Cl. 202-84.000.
Lynch, Donald F., to Electronic Processors, Inc. Magnetic recording system with peak shift compensation. 4,553,178, Cl. 360-45.000.
Lynch, Robert J.: *See—*
Kahn, Marvin L.; and Lynch, Robert J., 4,552,773, Cl. 426-564.000.
Lynk, Charles N., Jr.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Melchior, Eckhard, 4,552,741, Cl. 423-359.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Gollinger, Franz X., 4,552,067, Cl. 101-216.000.
M. Lehmacher & Sohn GmbH Maschinenfabrik: *See—*
Dreckmann, Karl, 4,552,551, Cl. 493-194.000.
Ma Ma Macaroni Co., Ltd.: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.
Maag Gear-Wheel & Machine Company Limited: *See—*
Berchtold, Nikolaus, 4,552,014, Cl. 73-105.000.
Bloch, Peter; and Wydler, Robert, 4,551,954, Cl. 51-287.000.
Sigg, Hans; and Staedeli, Otto, 4,552,258, Cl. 192-67.00A.
Maak, Norbert; and Lieske, Edgar, to Henkel KGaA. Hair dyes: diresorcyl sulphide, sulphoxide or sulphone coupling agents. 4,552,565, Cl. 8-409.000.
MacDonald, Scott A.: *See—*
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.
Macedo, Pedro B.: *See—*
Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., 4,552,577, Cl. 65-22.000.
Maciejczak, Robert A. Safety support and rescue clamp. 4,552,244, Cl. 182-82.000.
MacLaughlin, Donald N.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,552,612, Cl. 156-494.000.

MacLaury, Michael R.: *See*—
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., 4,552,783, Cl. 427-91.000.
Madray, Herbert R. Building construction. 4,551,957, Cl. 52-90.000.
Maeda, Hiroshi: *See*—
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Gouging wire electrode. 4,553,019, Cl. 219-146.220.
Maeshima, Katsuyoshi: *See*—
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.
Magnien, Ernest: *See*—
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.
Mahoney, Thomas P. Road warning emergency system and method of utilizing same. 4,552,089, Cl. 116-63.00P.
Mahotra, Satish K., to Steyr-Daimler-Puch Aktiengesellschaft. Rear sight for firearms. 4,551,920, Cl. 33-257.000.
Maida, Osamu, to Nippon Kogaku K. K. Power supply control circuit. 4,553,140, Cl. 340-636.000.
Makino, Ayumu: *See*—
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.
Malaval, Claude, to Novatome. Device for producing steam by heat exchange between a heat-transfer liquid metal and feed water. 4,552,210, Cl. 165-134.100.
Malicki, Raymond W., to Carron & Company. Strain gauge transducer assembly. 4,553,124, Cl. 338-5.000.
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., to Mylex Corporation. Data acquisition control method and system for a hand held reader. 4,553,035, Cl. 250-566.000.
Malzkorn, Matthias, to Scharmann GmbH & Co. Horizontal drilling and milling machine. 4,552,495, Cl. 409-136.000.
Mannesmann AG: *See*—
Gugel, Bernd; and Niebel, Harald, 4,552,471, Cl. 400-124.000.
Mannesmann, Gerda: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.
Manning, William R., to Champion Spark Plug Company. Alumina ceramic comprising a siliceous binder and at least one of zirconia and hafnia. 4,552,852, Cl. 501-105.000.
Mannion, William A.: *See*—
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.
Mansker, William L. Sample concentrating cable jig. 4,552,654, Cl. 209-425.000.
Mantovan, Gianfranco, to Pomini Farrel S.p.A. Device for replacing the rolls of rolling stands. 4,552,007, Cl. 72-239.000.
Marchello, John L., to Danmar Products, Inc. Wrestling helmet ear pads. 4,551,861, Cl. 2-425.000.
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, to Bayer Aktiengesellschaft. Pyrazolooxazines, pyrazolothiazines, and pryazoloquinolines and their use as medicaments. 4,552,874, Cl. 514-222.000.
Margel, Shlomo; and Beitler, Uzi, to Yeda Research and Development Company. Process for the production of polyacrolein microspheres and grafted microspheres. 4,552,812, Cl. 428-407.000.
Margrave, David L. Line Insertable valve. 4,552,170, Cl. 137-318.000.
Mariani, Piercarlo: *See*—
Bertani, Alberto; Mariani, Piercarlo; and Lissoni, Davide, 4,552,034, Cl. 74-547.000.
Mark, Victor, to General Electric Company. Process for the production of aromatic carbonates. 4,552,704, Cl. 260-463.000.
Mark, Victor, to General Electric Company. Polycarbonate of spiro dihydric phenol. 4,552,949, Cl. 528-201.000.
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., to International Business Machines Corporation. Highly integrated universal tape bonding. 4,551,912, Cl. 29-576.00S.
Marquardt, Susan K.: *See*—
Hansen, Paul E.; and Marquardt, Susan K., 4,552,795, Cl. 428-110.000.
Marr, Robert: *See*—
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,552,098, Cl. 122-379.000.
Marrett, Rolf: *See*—
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, 4,552,575, Cl. 62-544.000.
MARTELEC Societe Civile Particuliere: *See*—
Jacquemet, Georges, 4,553,074, Cl. 318-130.000.
Martens, Alan; Hobbs, Milton M.; and Snow, Bennie E., to Westinghouse Electric Corp. Anticipatory boiler feedpump suction head controller system. 4,552,099, Cl. 122-451.100.
Martens, Rolf: *See*—
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.
Marti, Franz: *See*—
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.
Martin, Dale A.: *See*—
Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., 4,552,730, Cl. 423-82.000.
Martin, Donald R.: *See*—
Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., 4,553,008, Cl. 200-148.00R.
Martin, Howard. Gauged root canal condenser spreader. 4,552,531, Cl. 433-147.000.
Martin, James P.: *See*—
Hubble, Fred F., III; and Martin, James P., 4,553,033, Cl. 250-353.000.
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., to American Cyanamid Company. Antibiotic LL-BO1208α and LL-BO1208β, process of preparation, pharmaceutical composition and method of use. 4,552,867, Cl. 514-18.000.
Marvin Glass & Associates: *See*—
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.
Marx, Michael: *See*—
Li, Tsung-Tee; and Marx, Michael, 4,552,898, Cl. 514-561.000.
Marx, Rainer: *See*—
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.
Marxer, John E.; and Kowles, John W., to Rosemount Inc. Non-intrusive ice detector. 4,553,137, Cl. 340-582.000.
Marzhauser, Heinz, to Gebr. Marzhauser Wetzlar oHG. Drive system for a microscope stage or the like. 4,552,033, Cl. 74-479.000.
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Plant phytopathogenic fungicidal agents based on maleimide. 4,552,890, Cl. 514-425.000.
Masaki, Jun. Transfer sheet with color pattern having metallic luster, and method of manufacturing said sheet. 4,552,829, Cl. 430-258.000.
Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft: *See*—
Grimm, Hans; and Fingerle, Hermann, 4,551,947, Cl. 51-34.00H.
Maschinenfabrik Schrarer AG: *See*—
Wust, Olivier, 4,552,320, Cl. 242-128.000.
Maschinenfabrik Sulzer-Ruti AG: *See*—
Bertsch, Gotthilf; and Braun, Josef, 4,552,187, Cl. 139-434.000.
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., to Getty Oil Company. Process for the recovery of gold from refractory ores by pressure oxidation. 4,552,589, Cl. 75-105.000.
Masuda, Shigeo; and Katsuda, Morihiko, to Sumitomo Electric Industries, Ltd. Process for producing insulated rectangular wire. 4,552,599, Cl. 156-50.000.
Masuda, Shunji: *See*—
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.
Masuda, Toshiro; and Tanaka, Yoichi, to Toppan Printing Co., Ltd. Gravure screen and method of making the same. 4,553,215, Cl. 364-525.000.
Mathieu, Bernd: *See*—
Polaschegg, Hans-Dietrich; and Mathieu, Bernd, 4,552,552, Cl. 604-4.000.
Mathis, Ronald F., to General Dynamis Electronics Division. Fast frequency hopping demodulation system with serial accumulation of signal. 4,553,101, Cl. 329-50.000.
Matson, Wayne R., to ESA, Inc. Electrochemical system. 4,552,013, Cl. 73-61.10C.
Matsubara, Nobuyuki: *See*—
Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, 4,552,743, Cl. 423-447.700.
Matsuda, Hisashi, to Jeol Ltd. Mass spectrometer. 4,553,029, Cl. 250-296.000.
Matsumoto, Kazuya: *See*—
Kawamura, Naoto; and Matsumoto, Kazuya, 4,553,036, Cl. 250-578.000.
Matsumoto, Satosi: *See*—
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, 4,552,009, Cl. 72-316.000.
Matsumoto, Tadao; and Inoue, Kazuo, to Shinko-Pfaudler Company, Ltd. Reaction and heat exchanger apparatus. 4,552,724, Cl. 422-138.000.
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Pneumatic massage mat. 4,551,874, Cl. 5-453.000.
Matsumura, Motohiro, to Nissan Motor Co., Ltd. Turbocharged internal combustion engine. 4,551,977, Cl. 60-611.000.
Matsushima, Yuichi: *See*—
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita. Sadahiko, 4,553,264, Cl. 455-189.000.
Inoue, Mamoru; Hara, Shoji; Hasegawa, Morimichi; and Imanishi, Kiyokazu, 4,552,045, Cl. 82-21.00R.
Kasahara, Yukio; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,553,099, Cl. 324-458.000.
Maeda, Masanori; Ishihara, Koji; and Ikebata, Tetsuo, 4,553,019, Cl. 219-146.220.
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, 4,552,152, Cl. 128-663.000.

Matsushita, Mitsumasa: *See*—
Sato, Shigeyuki; and Matsushita, Mitsumasa, 4,552,907, Cl. 523-455.000.

Matsushita, Takashi, to Sanden Corporation. Method of making a clutch rotor for an electromagnetic clutch. 4,552,005, Cl. 72-68.000.

Matsuura, Osamu: *See*—
Harasaki, Hayathugu; and Matsuura, Osamu, 4,552,400, Cl. 296-185.000.

Matzinger, Martin J.; and Orloff, Daniel L., to Oscar Mayer Foods Corporation. Automatic feeding of elongated products. 4,552,049, Cl. 83-27.000.

Maurer, Fritz: *See*—
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.

Max-Planck Gesellschaft zur Forderung der/Wissenschaften: *See*—
Wissler, Josef H., 4,552,761, Cl. 424-101.000.

Maxwell, Ian: *See*—
East, John; and Maxwell, Ian, 4,552,520, Cl. 425-79.000.

Mayer, Frederick J., to KMS Fusion, Inc. Materials processing using chemically driven spherically symmetric implosions. 4,552,742, Cl. 423-446.000.

Mayer, James R. Pilot operated control valve for hydraulically actuated reciprocating pump. 4,552,180, Cl. 137-625.660.

Mazda Motor Company: *See*—
Harasaki, Hayathugu; and Matsuura, Osamu, 4,552,400, Cl. 296-185.000.

Mazda Motor Corporation: *See*—
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, 4,552,239, Cl. 180-140.000.
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.
Okino, Yoshinori, 4,552,115, Cl. 123-489.000.
Tahara, Yoshitaka, 4,552,111, Cl. 123-425.000.

McCall, Thomas J.: *See*—
Miller, Leslie A.; and McCall, Thomas J., 4,552,513, Cl. 417-18.000.

McCarthy, Alfred F.: *See*—
Johnson, Philip A.; and McCarthy, Alfred F., 4,552,206, Cl. 165-80.300.

McCartney, Michael S., to Combustion Engineering, Inc. Coal fired furnace light-off and stabilization using microfine pulverized coal. 4,552,076, Cl. 110-347.000.

McClure, Scott G., to Roberts, Douglass B., a part interest. Process for preparing a cast metal surface structure for bonding to a tooth structure and material used therewith. 4,552,779, Cl. 427-2.000.

McColgin, William C.; and Pace, Laurel J., to Eastman Kodak Company. Planarizing layer for semiconductor substrates such as solid state imagers. 4,553,153, Cl. 357-30.000.

McCorquodale Machine Systems Limited: *See*—
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

McCready, Russell J., to General Electric Company. Polyetherimide esters. 4,552,950, Cl. 528-292.000.

McDaniel, Max P., to Phillips Petroleum Company. Polymerization catalyst system. 4,552,937, Cl. 526-125.000.

McDonald, Jerry D. Fixed hand span device for bowler. 4,552,359, Cl. 273-54.00B.

McEntire, Edward E., to Texaco Inc. Method of separating primary amines from tertiary amines using non-polar hydrocarbon solvent with or without polyhydroxylic compound. 4,552,957, Cl. 544-177.000.

McEntire, Edward E.: *See*—
Burns, Simon P.; Walton, John M.; and McEntire, Edward E., 4,552,958, Cl. 544-177.000.

McFrisby, Samuel J., to Ulicne, Joseph A., a part interest. Screwless collapsible sled, and methods of constructing and utilizing same. 4,552,371, Cl. 280-20.000.

McGibbon, Gregor D.: *See*—
Skidanenko, Constantine V.; and McGibbon, Gregor D., 4,552,994, Cl. 179-16.0AA.

McGlew, John J. Golf ball ejector for golf green hole liner. 4,552,358, Cl. 273-34.00A.

McGraw, Jim F.: *See*—
Fedorovich, George; Kirkland, Kenneth C.; and McGraw, Jim F., 4,552,367, Cl. 277-1.000.

McHugh, Lawrence F.; Huggins, Dale K.; Hepworth, Malcolm T.; and Laferty, John M., to AMAX Inc. Process for the production of molybdenum dioxide. 4,552,749, Cl. 423-606.000.

McIntyre, Allan E., to Sprague Devices, Inc. Ball joint structure. 4,552,480, Cl. 403-76.000.

McKay, Albert A., to WABCO Ltd. Manual release and automatic reset arrangement for spring-applied/air-released brake. 4,552,056, Cl. 92-29.000.

McKay, Richard J.: *See*—
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., 4,553,035, Cl. 250-566.000.

McNesby, John B.; and Walker, Erik K., to GTE Communication Systems Corporation. Data transmission by subrate grouping. 4,553,129, Cl. 340-347.0DD.

Mead Corporation, The: *See*—
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., 4,552,497, Cl. 412-6.000.

Mechin, Jean-Claude. Self-adhesive product, process for its manufacture and application as a dressing, packing sheet or fixing tape. 4,552,802, Cl. 428-255.000.

Medeco Security Locks, Inc.: *See*—
Roop, Stevie C., 4,552,001, Cl. 70-208.000.

Medi-Tech Incorporated: *See*—
Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., 4,552,554, Cl. 604-51.000.

Medical College of Wisconsin, The: *See*—
Riley, Danny A.; and Bain, James L. W., 4,552,145, Cl. 128-630.000.

Medical Research Associates, Ltd. #2: *See*—
Sterling, Robert E., 4,552,914, Cl. 524-269.000.

Medtronic, Inc.: *See*—
Hartlaub, Jerome T., 4,552,154, Cl. 128-702.000.

Meehan, Robert F.: *See*—
Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., 4,552,422, Cl. 339-17.0CF.

Megabar Explosives Corporation: *See*—
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.

Mehta, Arun K.: *See*—
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.

Meier, Joseph F.: *See*—
Cannady, Daniel L., Jr.; Berg, Gilbert G.; Leschek, Walter C.; and Meier, Joseph F., 4,552,781, Cl. 427-57.000.

Meiji Seika Kaisha Ltd.: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.

Meinig, Manfred, to Karl Meinig KG. Corner angle assembly. 4,552,388, Cl. 285-363.000.

Melchior, Eckhard, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method and apparatus for manufacturing synthesis gas. 4,552,741, Cl. 423-359.000.

Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, to Pioneer Industrial Components, Inc. Diaphragm material for acoustical transducer. 4,552,243, Cl. 181-169.000.

Memorex Corporation: *See*—
Berti, Eugenio, 4,553,181, Cl. 360-75.000.

Menard, Claude J.: *See*—
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Mendrala, James A. Video recording and film printing system quality-compatible with widescreen cinema. 4,553,176, Cl. 358-334.000.

Mennicken, Gerhard: *See*—
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.

Mercier, Robert: *See*—
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.

Merck & Co., Inc.: *See*—
Claremon, David A., 4,552,881, Cl. 514-295.000.

Merger, Franz; Hettinger, Peter; and Lange, Arno, to BASF Aktiengesellschaft. Preparation of aldols. 4,552,985, Cl. 568-497.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Dage, Richard C.; and Schnettler, Richard A., 4,552,880, Cl. 514-277.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Langer, Heinz G., 4,552,070, Cl. 102-290.000.

Metal Box Public Limited Company: *See*—
East, John; and Maxwell, Ian, 4,552,520, Cl. 425-79.000.

Metal Improvement Company, Inc.: *See*—
Biehle, William C., 4,552,017, Cl. 73-198.000.

Metalworking Lasers International Ltd.: *See*—
Hoag, Ethan D.; and Ravid, Amotz, 4,552,439, Cl. 350-610.000.

Mezo , Imre: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Michel, Yves: *See*—
Bolomey, Jean-Charles; and Michel, Yves, 4,552,151, Cl. 128-653.000.

Midorikawa, Ichiro: *See*—
Hatano, Yoshinori; Wada, Kiyoshi; and Midorikawa, Ichiro, 4,553,090, Cl. 324-73.0AT.

Miek, Wolfgang: *See*—
Stebegg, Josef; and Miek, Wolfgang, 4,552,987, Cl. 174-52.00R.

Mihara, Yuji: *See*—
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.
Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, 4,552,828, Cl. 430-217.000.

Mikami, Ryuzo; and Saruyama, Toshio, to Toray Silicone Company, Ltd. Room temperature-curable polyorganosiloxane composition whose cured products resist soiling. 4,552,919, Cl. 524-860.000.

Mikami, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Distribution table for controlling feed rate of articles supplied in automatic weighing apparatus. 4,552,236, Cl. 177-25.000.

Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, to American Colloid Company. Process for preparing dry solid water absorbing polyacrylate resin. 4,552,938, Cl. 526-240.000.

Mikiya, Toshio: *See—*
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, 4,551,874, Cl. 5-453.000.
Mikoda, Tamio: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Miles Laboratories, Inc.: *See—*
Yip, Kin F.; and Charlton, Steven C., 4,552,697, Cl. 260-396.00N.
Millar, Scott W., to Petrolite Corporation. Oil field biocide composition. 4,552,591, Cl. 106-18.330.
Miller, Leslie A.; and McCall, Thomas J., to Spectra-Physics, Inc. Multiple piston pump control. 4,552,513, Cl. 417-18.000.
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., to GTE Products Corporation. Method for removing tin from sodium tungstate solution. 4,552,729, Cl. 423-55.000.
Miller, Richard H.: *See—*
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.
Miller, Robert D.: *See—*
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.
Miller, Stephen H.: *See—*
Covington, Roger G.; and Miller, Stephen H., 4,553,232, Cl. 369-287.000.
Mills, David, to Rolls-Royce Ltd. Mould assembly for casting metal articles and a method of manufacture thereof. 4,552,197, Cl. 164-34.000.
Mills, David; and Kington, Alan D., to Rolls-Royce Ltd. Removing refractory material from components. 4,552,198, Cl. 164-122.200.
Minakata, Tsuyoshi: *See—*
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, 4,552,199, Cl. 164-423.000.
Minnesota Mining and Manufacturing Company: *See—*
Dziki, Michael M., 4,552,287, Cl. 222-146.500.
Fisch, Richard S., 4,552,826, Cl. 430-142.000.
Hansen, Paul E.; and Marquardt, Susan K., 4,552,795, Cl. 428-110.000.
Mueller, Gerald E., 4,553,190, Cl. 361-212.000.
Randen, Neil A., 4,552,755, Cl. 424-81.000.
Minolta Camera Kabushiki Kaisha: *See—*
Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, 4,552,445, Cl. 354-406.000.
Minow, Martin: *See—*
Bruckert, Edward; Conroy, David; Ellison, Richard; and Minow, Martin, 4,552,992, Cl. 178-69.00G.
Misco, Peter F., Jr.: *See—*
Kim, Choung U.; and Misco, Peter F., Jr., 4,552,696, Cl. 260-245.20T.
Mishra, Indu B., to Olin Corporation. Potassium fluoride stabilized ammonium nitrate. 4,552,736, Cl. 423-266.000.
Miskel, John J., Jr.: *See—*
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,552,670, Cl. 252-8.50C.
Misumi, Teruo: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, to Santen Pharmaceutical Co., Ltd. Aletheine derivatives. 4,552,765, Cl. 514-513.000.
Mita, Junichi: *See—*
Ishii, Masami; Arai, Fuminao; Hattori, Noriaki; and Mita, Junichi, 4,553,015, Cl. 219-121.0ED.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.
Miyazaki, Hiroshi, 4,552,080, Cl. 112-68.000.
Nishitani, Kazuo, 4,553,152, Cl. 357-24.000.
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, 4,552,690, Cl. 252-512.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Kimura, Takao; and Nagaoka, Yoshinobu, 4,552,708, Cl. 264-53.000.
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.
Mitsuda, Satoshi: *See—*
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, 4,552,703, Cl. 260-466.000.
Mitsuhashi, Shigeo: *See—*
Kita, Kouji; Itakura, Kohei; and Mitsuhashi, Shigeo, 4,552,566, Cl. 23-313.00R.
Mitsui-Nisso Corporation: *See—*
Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, 4,552,944, Cl. 528-55.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Mitutoyo Mfg. Co., Ltd.: *See—*
Sakata, Hideo; and Yoda, Yukiji, 4,551,919, Cl. 33-1.00M.
Miura, Toshihiko: *See—*
Fujiyama, Masaaki; Asai, Takamitsu; and Miura, Toshihiko, 4,552,808, Cl. 428-328.000.
Miwa, Hideo: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, to Fujitsu Limited. Electro-sound transducer eliminating acoustic multi-reflection, and ultrasonic diagnostic apparatus applying it. 4,552,021, Cl. 73-644.000.
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, to Sankyo Company Limited. Carbapenem compounds, and compositions containing them. 4,552,873, Cl. 514-210.000.
Miyahara, Tooru: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Miyamoto, Osamu: *See—*
Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, 4,552,590, Cl. 75-246.000.
Miyazaki, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Cloth cutting device in button-hole sewing machine. 4,552,080, Cl. 112-68.000.
Miyazaki, Kenji: *See—*
Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, 4,552,788, Cl. 427-374.500.
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, to Hitachi, Ltd. Multi-effect absorption refrigerating machine. 4,551,991, Cl. 62-476.000.
Miyoshi, Takahito: *See—*
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.
Mizuhara, Howard, to GTE Products Corporation. Thermally insulated piston. 4,552,057, Cl. 92-176.000.
Mizuno, Takaji: *See—*
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.
Mizuno, Toshio: *See—*
Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, 4,553,086, Cl. 324-57.00N.
Mobay Chemical Corporation: *See—*
Thiem, Karl W.; and Vanderpool, Daniel P., 4,552,981, Cl. 564-146.000.
Mobil Oil Corporation: *See—*
Audeh, Costandi A., 4,552,725, Cl. 422-140.000.
Horodysky, Andrew G., 4,552,569, Cl. 44-71.000.
Kuhl, Gunter H., 4,552,739, Cl. 423-328.000.
Peterson, Robert D.; and Penner, Wayne A., 4,553,133, Cl. 340-347.0DD.
Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., 4,552,648, Cl. 208-120.000.
Rubin, Mae K., 4,552,738, Cl. 423-328.000.
Mobley, Larry W.: *See—*
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,902, Cl. 521-129.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,903, Cl. 521-137.000.
Moduilte Corporation: *See—*
Castillo, Richard A., 4,551,899, Cl. 29-241.000.
Moechnig, Bruce W.: *See—*
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.
Moeschler, Heinrich-Ferdinand; Golker, Christian; and Lange, Peter M., to Bayer Aktiengesellschaft. Concentrating nikkomicin mixtures. 4,552,954, Cl. 536-24.000.
Mogaki, Tadahisa: *See—*
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, 4,551,874, Cl. 5-453.000.
Mohr, Robert K.: *See—*
Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., 4,552,577, Cl. 65-22.000.
Moller, Hermann: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Qullmalz, Wolfram, 4,552,402, Cl. 297-284.000.
Moller, Jens C. T.: *See—*
Iannicelli, Joseph; Caspersen, Leif D.; Hansen, Jan M.; and Moller, Jens C. T., 4,552,735, Cl. 423-224.000.
Molnar, Robert, to Simnar, Inc. Fish decapitator and eviscerator. 4,551,885, Cl. 17-59.000.
Moniotte, Philippe G.: *See—*
Devaux, Albert F. L. G.; and Moniotte, Philippe G., 4,552,929, Cl. 525-332.600.

Monsanto Company: *See*—
Barker, Robert I.; King, David P.; and Pawlowski, Henry A., 4,552,025, Cl. 73-846.000.
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,552,809, Cl. 428-331.000.
Van Eenam, Donald N., 4,552,940, Cl. 527-312.000.

Monsanto Europe, S.A.: *See*—
Devaux, Albert F. L. G.; and Moniotte, Philippe G., 4,552,929, Cl. 525-332.600.

Monterey Manufacturing Co.: *See*—
Hall, Charles P., 4,551,873, Cl. 5-450.000.

Mooney, John J.: *See*—
Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., 4,552,733, Cl. 423-213.500.

Moore, Clayton A.: *See*—
Knox, Lloyd C.; and Moore, Clayton A., 4,552,486, Cl. 405-227.000.

Moore, James E., to General Electric Company. Weatherable abrasion resistant etherified aminoplast derived coating for plastic substrates. 4,552,936, Cl. 525-519.000.

Moore, Larry V., to Rockwell International Corporation. Portable enclosure with combined latch and support system. 4,552,391, Cl. 292-5.000.

Moore, Michael H.: *See*—
Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., 4,552,452, Cl. 355-27.000.

Moos, Petr: *See*—
Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, 4,553,072, Cl. 315-244.000.

Moraillon, Jean-Yves, to Thomson-Brandt. Color television camera comprising a trichrome matrix filter. 4,553,159, Cl. 358-44.000.

Morell, Joseph; Paris, Jean; and Petrini, Roland, to Salomon S.A. Ski boot. 4,551,933, Cl. 36-120.000.

Morello, Michael E., to Caterpillar Tractor Co. Hold open device. 4,552,392, Cl. 292-181.000.

Morgan, Annis R., Jr.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,551,935, Cl. 40-584.000.

Morgan, Howard W. Liquid filter having self-retaining filter bags. 4,552,661, Cl. 210-232.000.

Morgan, Peter E. D.; and Pugar, Eloise A., to Rockwell International Corporation. Process for producing amorphous and crystalline silicon nitride. 4,552,740, Cl. 423-344.000.

Morgan, Robert K.: *See*—
Yaeger, John R.; and Morgan, Robert K., 4,551,974, Cl. 60-527.000.

Mori, Sachio: *See*—
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.

Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, to Pioneer Electronic Corp. Automatic sound volume control device. 4,553,257, Cl. 381-57.000.

Mori, Tomohiro: *See*—
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.

Mori, Toshiro: *See*—
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,551,996, Cl. 68-20.000.

Moriguchi, Fujio; and Kurata, Masami, to Fuji Xerox Co., Ltd. Drive device in a plane reading device. 4,553,174, Cl. 358-285.000.

Moriguchi, Sakumi: *See*—
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.

Morimoto, Mitsutaka: *See*—
Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, 4,551,908, Cl. 29-571.000.

Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, to N.D.C. Co., Ltd. Method of sintering stainless steel powder. 4,552,719, Cl. 419-2.000.

Morin, Jean-Xavier; and Chrysostome, Gerard, to Creusot-Loire. Process and installation for recycling solid unburnt materials in a fluidized bed. 4,552,078, Cl. 110-347.000.

Moringa Milk Industry, Co., Ltd.: *See*—
Nishizawa, Yoshito, deceased; and Kanaoka, Matao, 4,552,975, Cl. 560-163.000.

Morisawa, Tahei: *See*—
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.

Morishita, Hitoshi: *See*—
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.

Moroji, Takashi: *See*—
Itoh, Shinji; and Moroji, Takashi, 4,552,865, Cl. 514-15.000.

Morris-Sherwood, Betty J.; and Brink, Edward C., Jr., to Texaco Inc. Corrosion inhibiting composition and method. 4,552,686, Cl. 252-392.000.

Morrison, Thomas R. Vehicle gearshift indicator. 4,552,088, Cl. 116-28.100.

Morton Thiokol, Inc.: *See*—
Stevens, George L., 4,552,380, Cl. 280-728.000.

Moses, Kenneth G. Apparatus and method for plasma generation of x-ray bursts. 4,553,256, Cl. 378-137.000.

Motoren-und Turbinen-Union Munchen GmbH: *See*—
Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, 4,552,509, Cl. 415-135.000.

Motorola, Inc.: *See*—
Bynum, Byron G.; and Cave, David L., 4,553,048, Cl. 307-350.000.
Coe, Richard H., 4,553,262, Cl. 455-15.000.
Genrich, Thad J., 4,553,218, Cl. 364-703.000.
Kase, Kiyoshi; and Fukuta, Masaru, 4,553,054, Cl. 307-597.000.
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.
Vyne, Robert L., 4,553,106, Cl. 330-272.000.
Wrathall, Robert S., 4,553,084, Cl. 323-316.000.
Yim, Hyung J., 4,553,041, Cl. 307-252.00A.

Mott Metallurgical Corporation: *See*—
Sekellick, Ron S., 4,552,669, Cl. 210-798.000.

Motyka, Jerry: *See*—
Gavagan, James A.; and Motyka, Jerry, 4,552,319, Cl. 242-107.40A.

Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, to Kubota, Ltd. Excavating vehicle. 4,552,503, Cl. 414-687.000.

Moussaian, Gregoire G.: *See*—
Vartoukian, Artin G.; and Moussaian, Gregoire G., 4,552,081, Cl. 112-258.000.

Mozsary, Peter G. Osteocorrective dentoalveolar implant system. 4,552,532, Cl. 433-173.000.

MTU-Motoren-und Turbinen-Union Muenchen GmbH: *See*—
Breitmoser, Georg; and Vogel, Wilhelm, 4,552,209, Cl. 165-133.000.

Mucenieks, Paul R.: *See*—
Beacham, Harry H.; and Mucenieks, Paul R., 4,552,687, Cl. 252-500.000.

Mueller, Bruce M.; and Swierczek, Zbignew, to Owens-Illinois, Inc. Container closure. 4,552,279, Cl. 215-318.000.

Mueller, Gerald E., to Minnesota Mining and Manufacturing Co. Transparent container for electrostatic sensitive electronic components. 4,553,190, Cl. 361-212.000.

Muelling, Duane D.: *See*—
Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., 4,552,015, Cl. 73-113.000.

Mukai, Hiromu; Karasaki, Toshihiko; and Kawamura, Kunio, to Minolta Camera Kabushiki Kaisha. Focus condition detecting device for cameras. 4,552,445, Cl. 354-406.000.

Mukai, Ryoichi, to Fujitsu Limited. Process for fabricating a semiconductor device. 4,551,907, Cl. 29-571.000.

Mulcahy, Harry W.; Garivaltis, Dimitris; Karbowniczek, Stanley; and Kaufhold, Horst T., to AMSTED Industries Incorporated. Primary suspension for railroad car truck. 4,552,074, Cl. 105-224.100.

Muller, Dietrich. Process for the treatment of sewage sludge. 4,552,666, Cl. 210-710.000.

Muller, J. Joseph: *See*—
Doerr, Richard D.; Muller, J. Joseph; and Green, William A., 4,553,076, Cl. 318-282.000.

Muller, Peter R.: *See*—
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.

Mumallah, Naim A.: *See*—
Wu, Yulin; and Mumallah, Naim A., 4,552,217, Cl. 166-270.000.

Munk, Edmund; and Dietz, Martin, to Furnier-U.Sperrholzwerk; and J. F. Werz, Jr. KG, Werzalit-Pressholzwerk. Plate-shaped covering profile and method for manufacturing the same. 4,552,797, Cl. 428-167.000.

Murakami, Akira; and Yoshizaki, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha; and Kowa Co., Ltd. Method for stabilizing tissue plasminogen activator and a stable aqueous solution or powder containing the same. 4,552,760, Cl. 424-94.000.

Murakami, Katsuhiko; and Iwamoto, Yoshio, to Kabushiki Kaisha Ishida Koki Seisakusho. Article feeding apparatus. 4,552,262, Cl. 198-447.000.

Murakami, Kazuhito; and Takahashi, Kenichi, to Sumitomo Electric Industries, Ltd. Crystalline infrared optical fiber with a small gap and a process for the production of same. 4,552,434, Cl. 350-96.300.

Muralidhara, Ranya: *See*—
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,552,770, Cl. 426-535.000.

Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, to Lion Corporation. Hair cosmetic composition. 4,552,754, Cl. 424-70.000.

Murata, Katsuaki: *See*—
Harada, Koosuke; and Murata, Katsuaki, 4,553,199, Cl. 363-75.000.

Murata Kikai Kabushiki Kaisha: *See*—
Uematsu, Ikuzo, 4,551,887, Cl. 19-244.000.

Murata Manufacturing Co., Ltd.: *See*—
Kawabata, Kenji; and Sakabe, Yukio, 4,552,853, Cl. 501-134.000.
Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, 4,553,123, Cl. 336-83.000.

Murcko, Joseph S. Combination lawnmower and edger. 4,551,967, Cl. 56-13.700.

Murib, Jawad H., to National Distillers and Chemical Corporation. Catalyst for the preparation of unsaturated aldehydes and carboxylic acids. 4,552,860, Cl. 502-242.000.

Murley, Jackie D.; and Johnson, Marion, to Cosden Technology, Inc. Process for making a thin walled container from a plastic resin. 4,552,717, Cl. 264-549.000.

Murotani, Tatsunori, to Nippon Electric Co., Ltd. Logic circuit with improved hysteresis characteristics. 4,553,045, Cl. 307-279.000.

Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., to St. Jude Children's Research Hospital. Use in an animal host and precursors for vaccines utilizing avian-human reassortants to combat influenza A virus. 4,552,757, Cl. 424-89.000.

Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., to St. Jude Children's Research Hospital. Human use of avian-human reassortants as vaccines for influenza A virus. 4,552,758, Cl. 424-89.000.

Murphy, Lawrence M., to United States of America, Energy. Cable tensioned membrane solar collector module with variable tension control. 4,552,438, Cl. 350-608.000.

Murray, Joseph A.: *See*—
Vailati, Tony; and Murray, Joseph A., 4,551,994, Cl. 66-193.000.

Murray, Richard C., Jr.: *See*—
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Murray, William M. Femoral component and method. 4,551,863, Cl. 623-23.000.

Musser, John H.: *See*—
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.

Muto, Rudolph. Pressure warning, indicating and applying monitor for cuff type indwelling devices. 4,552,558, Cl. 604-100.000.

Myers Electric Products, Inc.: *See*—
Myers, Stephanie A., 4,552,430, Cl. 339-242.000.

Myers, Stephanie A., to Myers Electric Products, Inc. Connector head for electric terminal box. 4,552,430, Cl. 339-242.000.

Mylex Corporation: *See*—
Malinsky, Igor; Cofino, Jose B.; and McKay, Richard J., 4,553,035, Cl. 250-566.000.

Myocur, Inc.: *See*—
Jensen, Ronald P.; and Allcroft, Arthur N., 4,552,146, Cl. 128-305.000.

N.D.C. Co., Ltd.: *See*—
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.

Nace, Robert J., to Bethlehem Steel Corporation. Detachable portable continuous-belt driving head. 4,551,951, Cl. 51-170.0EB.

Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., to Dow Chemical Company, The. Process for preparing stable solutions of trimerized isocyanates in monomeric polyisocyanates. 4,552,902, Cl. 521-129.000.

Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., to Dow Chemical Company, The. Flexible polyurethane foams prepared from cotrimers of alkylene-bridged polyphenylene polyisocyanates. 4,552,903, Cl. 521-137.000.

Nagahori, Morihiro, to Kabushiki Kaisha Nagahori. Necklace with slidably mounted decorative element. 4,551,993, Cl. 63-31.000.

Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, to Mazda Motor Corporation. Valve timing control for internal combustion engines. 4,552,112, Cl. 123-432.000.

Nagaoka, Satoshi: *See*—
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.

Nagaoka, Yoshinobu: *See*—
Kimura, Takao; and Nagaoka, Yoshinobu, 4,552,708, Cl. 264-53.000.

Nagarajan, Ramakrishnan; and Schabel, Amelia A., to Eli Lilly and Company. Glycopeptide antibiotics and process of preparation. 4,552,701, Cl. 260-112.50R.

Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, to Nippon Electric Co., Ltd. Process of forming electrodes and interconnections on silicon semiconductor devices. 4,551,908, Cl. 29-571.000.

Nagashima, Akira, to Kioritz Corporation. Fuel pipe joint. 4,552,105, Cl. 123-198.00R.

Nagato, Hitoshi: *See*—
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., to NCR Corporation. Transport for diverted and purged sheets in a sheet dispenser. 4,552,350, Cl. 271-3.000.

Naito, Shotaro: *See*—
Tokuyama, Keiichi; Naito, Shotaro; and Watanabe, Shizuhisa, 4,553,196, Cl. 363-21.000.

Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, to Matsushita Electric Industrial Co., Ltd. Industrial robot. 4,552,504, Cl. 414-735.000.

Nakade, Toshiaki: *See*—
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,553,172, Cl. 358-280.000.

Nakagawa, Katsumi: *See*—
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,552,824, Cl. 430-64.000.

Nakagawa, Kazuyuki: *See*—
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.

Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuhke; Adachi, Tokio; and Kawachi, Shoji, to Daikin Kogyo Co., Ltd. Tetrafluoroethylene/hexafluoropropylene copolymer having improved extrudability. 4,552,925, Cl. 525-200.000.

Nakajima Dokosho Co. Ltd.: *See*—
Nakajima, Masahiko, 4,552,124, Cl. 126-413.000.

Nakajima, Masahiko, to Nakajima Dokosho Co. Ltd. Heat processing apparatus. 4,552,124, Cl. 126-413.000.

Nakajima, Motoo, to Kikkoman Corporation. Method for determination of formaldehyde. 4,552,849, Cl. 436-130.000.

Nakaju, Isamu: *See*—
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.

Nakamura, Katsuhiro, to NEC Corporation. Error-correction system for two-dimensional multilevel signals. 4,553,237, Cl. 371-37.000.

Nakamura, Takashi; and Yamaji, Kazunori, to Sony Corporation. Deflection control circuit with level conversion. 4,553,073, Cl. 315-370.000.

Nakamura, Taku; and Kasama, Yasuo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive element having a light insensitive upper layer. 4,552,835, Cl. 430-523.000.

Nakanishi, Hiroshi: *See*—
Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi, 4,553,138, Cl. 340-584.000.

Nakanishi, Takashi: *See*—
Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi, 4,553,138, Cl. 340-584.000.

Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi. Fire alarm system. 4,553,138, Cl. 340-584.000.

Nakao, Narutaka: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, to Nippon Kokan Kabushiki Kaisha. Method of operating ladle refining furnace. 4,552,587, Cl. 75-12.000.

Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, to Sanyo Electric Co., Ltd. Temperature control for microwave oven. 4,553,011, Cl. 219-10.55B.

Nakata, Tohru; Endo, Hiroyuki; Harada, Masatoshi; Hayasaka, Tadao; and Miyamoto, Osamu, to Hitachi Powdered Metals Co. Ltd. Ferro-sintered alloys. 4,552,590, Cl. 75-246.000.

Nakatani, Kiyoshi: *See*—
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Nakayama, Shigeki: *See*—
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.

Nalco Chemical Company: *See*—
Payne, Charles C., 4,552,804, Cl. 428-283.000.

Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., to Nall, Kent J. Batting instruction system. 4,552,120, Cl. 124-1.000.

Namba, Keisuke: *See*—
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.

Namiki, Fumihiro: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Nanya, Tamio: *See*—
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.

Narayan, Surendra D.; and Thomas, Rudy V., to Allied Corporation. Low friction self-locking adjust tongue. 4,551,889, Cl. 24-196.000.

Narayanan, Swami: *See*—
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,552,644, Cl. 208-78.000.

Narita, Shuichi, to Victor Company of Japan, Ltd. Device for detecting abnormalities in tape travel. 4,553,182, Cl. 360-96.100.

Naterstad, Tormod: *See*—
Gunnes, Kare; Naterstad, Tormod; and Lid, Olav, 4,552,530, Cl. 432-192.000.

National Distillers and Chemical Corporation: *See*—
Murib, Jawad H., 4,552,860, Cl. 502-242.000.

National Electric Control Company: *See*—
Sass, Richard G., 4,552,989, Cl. 174-103.000.

National Semiconductor Corporation: *See*—
Bittner, Harry J., 4,553,044, Cl. 307-270.000.
Layher, Francis W., 4,552,267, Cl. 206-334.000.

Natoli, Giuseppe: *See*—
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,552,678, Cl. 252-49.300.

Nature's Window, Inc.: *See*—
Puckett, Paul B., 4,552,093, Cl. 119-17.000.

Nazar, Linda F.: *See*—
Ozin, Geoffrey A.; Nazar, Linda F.; and Hugues, Francois, 4,552,855, Cl. 502-74.000.

NCR Corporation: *See*—
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Neale, Thomas J., to Foster Wheeler Energy Corporation. Solids feed control valve assembly. 4,552,490, Cl. 406-56.000.

NEC Corporation: *See*—
Fukaya, Hirokazu, 4,552,118, Cl. 123-609.000.
Nakamura, Katsuhiro, 4,553,237, Cl. 371-37.000.
Takahashi, Kazukiyo, 4,553,052, Cl. 307-494.000.
Yoshida, Yasuharu, 4,553,102, Cl. 329-133.000.

Neff Gewindespindeln GmbH: *See*—
Lehmann, Wolfgang; and Aab, Hans-Walter, 4,552,416, Cl. 308-6.00C.

Neiman S.A.: *See*—
Lipschutz, Paul, 4,552,000, Cl. 70-185.000.

Nemec, Frantisek; Moos, Petr; Bytesnik, Milan; Kuba, Jan; and Lacina, Tomislav, to Ceske vysoke uceni technicke v Praze. Circuit con-

nected in series with a discharge valve source. 4,553,072, Cl. 315-244.000.
Nepon, Juanita. Methods of preparing an arthritis composition. 4,552,762, Cl. 424-106.000.
Nesler, John J., to Hughes Aircraft Company. Transformerless drive circuit for field-effect transistors. 4,553,082, Cl. 323-288.000.
Nestec S.A.: *See—*
Lunder, Tito L.; and Nielsen, Corine M., 4,552,769, Cl. 426-435.000.
Nettleton, Donald E., Jr.; Bush, James A.; Bradner, William T.; and Doyle, Terrence W., to Bristol-Myers Company. Process for producing rebeccamycin. 4,552,842, Cl. 435-75.000.
Neuray, Dieter: *See—*
Cohnen, Wolfgang; Kircher, Klaus; Muller, Peter R.; Krishnan, Sivaram; and Neuray, Dieter, 4,552,911, Cl. 524-94.000.
Neuss, Hans W.: *See—*
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.
Nevadunsky, Charles J.: *See—*
Carl, Louis C.; and Nevadunsky, Charles J., 4,552,174, Cl. 137-527.200.
New Balance Athletic Shoe, Inc.: *See—*
Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, 4,551,930, Cl. 36-30.00R.
New Fibers International Inc.: *See—*
Kauppi, Peter K., 4,552,616, Cl. 162-19.000.
Newman, Richard W.; Connors, John D.; Kugler, Andrew J.; and Loeffler, Herbert H., to Welch Allyn Inc. Pressure gauge. 4,552,153, Cl. 128-677.000.
NGK Insulators, Ltd.: *See—*
Takeyuki, Mizuno, 4,552,510, Cl. 416-241.00B.
Nguyen, Hung T.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
Nickels, Richard C., Jr.; and Stevens, Gerald S., Jr., to General Instrument Corp. Top loading sheet feed apparatus for printer or the like. 4,552,352, Cl. 271-10.000.
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., to General Loose Leaf Bindery Co., Inc. Easel type binder. 4,552,479, Cl. 402-74.000.
Nickow, Martin A.: *See—*
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., 4,552,479, Cl. 402-74.000.
Nicks, Peter F.; and Young, Gillian A., to Imperial Chemical Industries PLC. Water-dilutable aqueous coating compositions. 4,552,908, Cl. 523-504.000.
Nicolet Instrument Corporation: *See—*
Hyatt, James R., 4,553,109, Cl. 331-25.000.
Nicolo, Pierfrancesco, to C.M.T. San Crato S.r.l. Automatic separator device for filling boxes with tubes. 4,551,963, Cl. 53-148.000.
Niebel, Harald: *See—*
Gugel, Bernd; and Niebel, Harald, 4,552,471, Cl. 400-124.000.
Nielsen, Alfred T. Pressure roller apparatus for briquetting cut material of biological origin such as green crops, wood flakes or peat. 4,552,567, Cl. 44-13.000.
Nielsen, Corine M.: *See—*
Lunder, Tito L.; and Nielsen, Corine M., 4,552,769, Cl. 426-435.000.
Niemi, Pertti K., to Oy Pajakanta AB. Bayonet catch for a line of pressurized medium. 4,552,333, Cl. 251-149.900.
Nienaber, David K.: *See—*
Flasza, Michael D.; and Nienaber, David K., 4,553,141, Cl. 340-703.000.
Nieuweboer, Bob: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.
Nihon Tokushu Noyaku Seizo K.K.: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.
Nikken Sekkei Ltd.: *See—*
Hirano, Yutaka; and Kawai, Hiroki, 4,552,601, Cl. 156-79.000.
Nikolics, Karoly: *See—*
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
Nippon Electric Co., Ltd.: *See—*
Murotani, Tatsunori, 4,553,043, Cl. 307-279.000.
Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, 4,551,908, Cl. 29-571.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Takeuchi, Chifumi, 4,552,051, Cl. 84-1.240.
Nippon Kogaku K. K.: *See—*
Maida, Osamu, 4,553,140, Cl. 340-636.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Nakashima, Hirohisa; Komatsu, Yoshimi; Ikeda, Masafumi; and Kondo, Tsuneo, 4,552,587, Cl. 75-12.000.
Nippon Kouatsu Electric Co.: *See—*
Fujita, Toshio; and Watanabe, Kazuhiro, 4,552,915, Cl. 524-322.000.
Nippon Oil Company, Ltd.: *See—*
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.
Nippon Oil and Fats Co., Ltd.: *See—*
Igarashi, Taizo; Higuchi, Hisao; and Yamazaki, Shingo, 4,552,568, Cl. 44-51.000.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,551,896, Cl. 29-156.40R.
Nippon Seiko Kabushiki Kaisha: *See—*
Takei, Kenji; and Akabane, Yukihiro, 4,552,467, Cl. 384-615.000.
Nippon Soken, Inc.: *See—*
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.
Nippon Steel Corporation: *See—*
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.
Nippon Telephone & Telegraph Public Corp.: *See—*
Hara, Ryoichi; Kuroha, Toshiaki; and Inagaki, Nobuo, 4,552,576, Cl. 65-2.000.
Nippon Yakin Kogyo Co., Ltd.: *See—*
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, 4,552,199, Cl. 164-423.000.
Nippondenso Co., Ltd.: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukava, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.
Nishida, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Structure for retaining tank cap. 4,552,282, Cl. 220-20.000.
Nishikawa, Toshio: *See—*
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.
Nishimura, Takumi: *See—*
Fujii, Takashi; Ando, Masamoto; and Nishimura, Takumi, 4,552,413, Cl. 303-106.000.
Nishitani, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Monolithic infrared ray charge transfer element. 4,553,152, Cl. 357-24.000.
Nishiura, Junji, to Takeda Riken Co., Ltd. Counter-address memory for multi-channel timing signals. 4,553,100, Cl. 328-63.000.
Nishizawa, Hisako, heir: *See—*
Nishizawa, Yoshito, deceased; and Kanaoka, Matao, 4,552,975, Cl. 560-163.000.
Nishizawa, Tsutomu: *See—*
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, 4,552,684, Cl. 252-299.100.
Nishizawa, Yoshito, deceased (by Nishizawa, Hisako, heir); and Kanaoka, Matao, to Moringa Milk Industry, Co., Ltd. Manufacturing process for N-carbobenzyloxy-L-glutamic acid-α-cholinester salt. 4,552,975, Cl. 560-163.000.
Nissan Motor Company, Limited: *See—*
Endo, Hiroshi, 4,552,456, Cl. 356-5.000.
Hara, Kenjiro; and Shirose, Haruya, 4,552,104, Cl. 123-192.00R.
Kojima, Shuichi, 4,552,186, Cl. 139-100.000.
Matsumura, Motohiro, 4,551,977, Cl. 60-611.000.
Suzuki, Kunihiko, 4,552,241, Cl. 180-249.000.
Nisshin Steel Co., Ltd.: *See—*
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.
Nitto Kohki Co., Ltd.: *See—*
Matsumura, Mitsuma; Mogaki, Tadahisa; and Mikiya, Toshio, 4,551,874, Cl. 5-453.000.
Nix, Richard; and Leigh-Monstevens, Keith V., to Automotive Products plc. Shipping and installation strap for linear actuator. 4,551,976, Cl. 60-533.000.
Nixdorf Computer AG: *See—*
Scholich, Peter, 4,553,177, Cl. 360-43.000.
Noda, Takeshi: *See—*
Takaku, Hiroshi; and Noda, Takeshi, 4,552,955, Cl. 536-24.000.
Noguchi, Masahisa; and Kaneda, Kazuji, to Furukawa Electric Co., Ltd., The. Method and apparatus for fixing an end of a coiled wire on a take up spool. 4,552,314, Cl. 242-25.00R.
Nolan, Dennis C.: *See—*
Burns, James A.; and Nolan, Dennis C., 4,553,187, Cl. 361-96.000.
Nolting, Wolfgang: *See—*
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.
Noon, Robert A.: *See—*
Kay, Ian T.; and Noon, Robert A., 4,552,887, Cl. 514-381.000.
Noonan, Daniel T.: *See—*
Kockler, Barry C.; Dobson, John E.; and Noonan, Daniel T., 4,552,497, Cl. 412-6.000.
Norand Corporation: *See—*
Koenck, Steven E., 4,553,081, Cl. 320-43.000.
Nordson Corporation: *See—*
Harjar, Martin J., 4,552,502, Cl. 414-680.000.
Jameson, Calvin R.; and Baker, Robert G., 4,553,023, Cl. 219-301.000.
Noritake Co., Limited: *See—*
Hattori, Yoshiaki; and Ishihara, Makoto, 4,552,329, Cl. 249-134.000.
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, to Teijin Limited. Pneumatic cellular aromatic polyamide articles and process for the preparation thereof. 4,552,810, Cl. 428-398.000.
Norris, Henry F. Composition and method for lubricating insulated electrical conductors. 4,552,676, Cl. 252-20.000.
Norris, Robert D.: *See—*
Brown, Richard A.; and Norris, Robert D., 4,552,668, Cl. 210-759.000.

Brown, Richard A.; and Norris, Robert D., 4,552,674, Cl. 252-8.55R.
Brown, Richard A.; and Norris, Robert D., 4,552,675, Cl. 252-8.55R.
North American Philips Consumer Electronics Corp.: *See—*
Brennensholtz, Matthew S.; and Donofrio, Robert L., 4,552,459, Cl. 356-448.000.
Norton Christensen, Inc.: *See—*
Pay, Clifford R.; and Thornton, F. James, 4,552,231, Cl. 175-330.000.
Radford, Steven R.; and Hyland, Craig R., 4,552,229, Cl. 175-240.000.
Norton, Edward J.: *See—*
Graham, Kenneth W.; Norton, Edward J.; and Kurata, Shuhei, 4,551,930, Cl. 36-30.00R.
Noto, Akira: *See—*
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.
Novacor Medical Corporation: *See—*
Spahic, Bojana K.; and Green, George F., 4,552,816, Cl. 428-420.000.
Novatome: *See—*
Malaval, Claude, 4,552,210, Cl. 165-134.100.
NSK-Warner K.K.: *See—*
Ono, Katsuyasu, 4,552,408, Cl. 297-483.000.
Numonics Corporation: *See—*
Hulls, Leonard R., 4,552,991, Cl. 178-19.000.
Nunes, Maurice: *See—*
Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., 4,552,123, Cl. 126-369.000.
Nuttle, David A. Structure heating and cooling system. 4,552,212, Cl. 165-48.200.
Nuttle, David A. Composting container for field use. 4,552,484, Cl. 405-128.000.
Nyman, Tapani: *See—*
Laitinen, Sakari; and Nyman, Tapani, 4,552,619, Cl. 162-336.000.
Oak Industries Inc.: *See—*
Van Zeeland, Anthony J.; and Denley, Ronald S., 4,553,009, Cl. 200-340.000.
Oake, Hugh F. Game table with multiple playing surfaces. 4,552,362, Cl. 273-237.000.
Obradovic, Peter: *See—*
Lorcks, Jurgen; Obradovic, Peter; Hochbahn, Peter; and Feeser, Hermann, 4,552,918, Cl. 524-734.000.
O'Brien, David A.: *See—*
Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., 4,552,680, Cl. 252-102.000.
Occidental Oil Shale, Inc.: *See—*
Ellington, Rex T., 4,552,409, Cl. 299-2.000.
Ochiai, Kenji: *See—*
Shoji, Takashi; and Ochiai, Kenji, 4,552,691, Cl. 252-514.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,552,917, Cl. 524-590.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,552,943, Cl. 528-50.000.
Oda, Goro: *See—*
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, 4,552,417, Cl. 308-10.000.
Oda, Kengo: *See—*
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.
Oda, Yukio: *See—*
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, 4,551,950, Cl. 51-165.870.
Odajima, Akeshi: *See—*
Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, 4,552,610, Cl. 156-384.000.
O'Donnell, Laurene H.: *See—*
Litwak, Alfred A.; and O'Donnell, Laurene H., 4,552,306, Cl. 239-29.000.
Odorzynski, Thomas W.; and Knott, Jack E., II, to American Can Company. Plasticized EVOH and process and products utilizing same. 4,552,801, Cl. 428-220.000.
Odorzynski, Thomas W.: *See—*
Krueger, Duane A.; and Odorzynski, Thomas W., 4,552,714, Cl. 264-171.000.
Officine Vezzani S.p.A.: *See—*
Vezzani, Luciano, 4,552,062, Cl. 100-95.000.
Ogawa, Akira: *See—*
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.
Ogawa, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current mirror circuit having stabilized output current. 4,553,107, Cl. 330-288.000.
Ogawa, Kimiaki: *See—*
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, to Shionogi & Co., Ltd. N-Acetyl-β-D-glucosaminides for determining N-acetyl-β-D-glucosaminidase activity. 4,552,841, Cl. 435-18.000.
Ogawa, Yonekichi, to Suisaku Kabushiki Kaisha. Filter. 4,552,657, Cl. 210-169.000.
Ogishima, Kiichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic head slider. 4,553,184, Cl. 360-103.000.
Ogiso, Haruhiko: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, to Takemoto Yushi Kabushiki Kaisha. Spin finish compositions for polyester and polyamide yarns. 4,552,671, Cl. 252-8.900.
Oguni, Kensaku: *See—*
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., to International Business Machines Corporation. Method for making self-aligned lateral bipolar transistors. 4,551,906, Cl. 29-571.000.
O'Hare, Louis R. Bimetallic solar engine. 4,551,978, Cl. 60-641.130.
Ohe, Takeshi: *See—*
Takeshima, Sadao; and Ohe, Takeshi, 4,552,240, Cl. 180-142.000.
Ohe, Yoshikazu, to Fujitsu Limited. Method of testing IC memories. 4,553,225, Cl. 365-201.000.
Ohio Medical Research, Inc.: *See—*
Hoffman, Allan; and Benford, Harry, 4,552,142, Cl. 128-207.160.
Ohkawa, Masaki: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.
Ohkawa, Michihisa: *See—*
Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, 4,553,086, Cl. 324-57.00N.
Ohkawa, Toshio: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.
Ohl, Herbert, to Wilkhahn Wikening & Hahne GmbH & Co. Chair. 4,552,406, Cl. 297-445.000.
Ohl, John P.: *See—*
Spence, Lewis C., 4,552,106, Cl. 123-198.00A.
Ohnishi, Hiroshi: *See—*
Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, 4,553,264, Cl. 455-189.000.
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, to Tohoku Mikuni Kogyo Kabushiki Kaisha. Fuel injection valve. 4,552,312, Cl. 239-585.000.
Ohsaki, Tsuyoshi: *See—*
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Fujita, Masahito, 4,552,719, Cl. 419-2.000.
Ohtsuki, Zenju: *See—*
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.
Okabayashi, Hidekazu: *See—*
Nagasawa, Eiji; Okabayashi, Hidekazu; Morimoto, Mitsutaka; and Higuchi, Kohei, 4,551,908, Cl. 29-571.000.
Okada, Shigeo: *See—*
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.
Okamura, Michiya: *See—*
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.
Okano, Kiichiro: *See—*
Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, 4,553,079, Cl. 318-626.000.
Okawa, Takashi: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Nastuko; and Watanabe, Toshiyasu, 4,552,986, Cl. 568-902.000.
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,552,837, Cl. 430-550.000.
Oki Electric Industry Co., Ltd.: *See—*
Hoga, Hiroshi, 4,552,595, Cl. 148-1.500.
Okino, Yoshinori, to Mazda Motor Corporation. Air-fuel ratio control means for internal combustion engines. 4,552,115, Cl. 123-489.000.
Okutsu, Toshimitsu: *See—*
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, 4,552,807, Cl. 428-323.000.
Olander, John W., to Westland Foods Corporation. Bacon bit finishing method. 4,552,768, Cl. 426-480.000.
Olin Corporation: *See—*
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,552,499, Cl. 414-125.000.
Grolitzer, Marilyn A., 4,552,673, Cl. 252-8.55D.
Mishra, Indu B., 4,552,736, Cl. 423-266.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,917, Cl. 524-590.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,943, Cl. 528-50.000.
Parthasarathi, Arvind, 4,552,627, Cl. 204-27.000.
Olsen, Arthur A.: *See—*
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,553,217, Cl. 364-560.000.
Olsen, Arthur M., to Honeywell Inc. Method of compensating an amplifier system having a variable gain amplifier to achieve a constant overall system signal gain and an apparatus utilizing the same. 4,553,104, Cl. 330-129.000.
Olsson, Aron, to Scanpump AB. Variable fluid flow restricting throttle. 4,552,178, Cl. 137-625.460.

Olympia Werke AG: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.
Olympic Fastening Systems: *See—*
Hein, James R., 4,552,010, Cl. 72-391.000.
Olympic Narrow Fabrics Company, Inc.: *See—*
Vailati, Tony; and Murray, Joseph A., 4,551,994, Cl. 66-193.000.
Olympus Optical Co., Ltd.: *See—*
Kinoshita, Kunio, 4,552,130, Cl. 128-4.000.
Omagari, Yasuhiko, 4,552,131, Cl. 128-6.000.
Utsugi, Mikio; and Yamaguchi, Tathuya, 4,552,129, Cl. 128-4.000.
Omagari, Yasuhiko, to Olympus Optical Co., Ltd. Co-viewing device for endoscope. 4,552,131, Cl. 128-6.000.
Omron Tateisi Electronics Co.: *See—*
Agatahama, Shunichi, 4,553,118, Cl. 335-79.000.
Ong, Richard H.; and Economopoulos, Peter C., to Honeywell Information Systems Inc. Sense amplifier. 4,553,053, Cl. 307-530.000.
Ono, Katsuyasu, to NSK-Warner K.K. Adjustable anchor mounting device. 4,552,408, Cl. 297-483.000.
Ono Pharmaceutical Co., Ltd.: *See—*
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.
Ono, Shoji: *See—*
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.
Onoyama, Takashi; Ando, Osamu; and Minakata, Tsuyoshi, to Nippon Yakin Kogyo Co., Ltd. Apparatus for producing flake particles. 4,552,199, Cl. 164-423.000.
Oonishi, Taizo: *See—*
Kawaguchi, Takeshi; Ishikawa, Yoshimi; and Oonishi, Taizo, 4,552,373, Cl. 280-276.000.
Opower, Hans; and Ernst, Volker, to W.C. Heraeus GmbH. Gas laser. 4,553,242, Cl. 372-87.000.
Orloff, Daniel L.: *See—*
Matzinger, Martin J.; and Orloff, Daniel L., 4,552,049, Cl. 83-27.000.
Orlowski, Reiner U.: *See—*
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.
Ormat Turbines, Ltd.: *See—*
Bronicki, Lucien Y., 4,551,980, Cl. 60-698.000.
Orofino, Thomas A.: *See—*
Broaddus, Wayne R.; Jaber, Khalil N.; and Orofino, Thomas A., 4,552,809, Cl. 428-331.000.
Osaka, Tadashi: *See—*
Ikeda, Yuuji; Abe, Hiroo; Osaka, Tadashi; and Komuro, Katsumi, 4,551,893, Cl. 29-33.00M.
Osaki, Yasunari: *See—*
Ikeguchi, Nobuyuki; Osaki, Yasunari; and Furuya, Yoshiyuki, 4,552,690, Cl. 252-512.000.
Oscar Mayer Foods Corporation: *See—*
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Oshima, Akio: *See—*
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.
Osterloh, David. Pulling hitch assembly. 4,552,374, Cl. 280-411.00R.
Ostertag, Werner, to BASF Aktiengesellschaft. Preparation of effect pigments coated with metal oxides. 4,552,593, Cl. 106-291.000.
Oswalt, Stephen M.: *See—*
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.
Otis, John F. Cable dispensing apparatus. 4,552,323, Cl. 242-865.00R.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.
Ott, Karl-Erich; and Behrens, Thomas, to Hoechst Aktiengesellschaft. Stirrer for stirring near a vessel wall. 4,552,461, Cl. 366-279.000.
Outboard Marine Corporation: *See—*
Baltz, Gene F.; and Jourdan, Donovan K., 4,552,103, Cl. 123-186.000.
Borst, Gaylord M.; and Walsworth, Frank J., 4,552,101, Cl. 123-73.0AD.
Ovaert, Francis: *See—*
Reneault, Patrick; and Ovaert, Francis, 4,551,958, Cl. 52-309.400.
Owen, William R.; and Juhasz, Andras. Containers for waste products. 4,552,280, Cl. 220-1.00T.
Owens-Corning Fiberglas Corporation: *See—*
Schneider, William A., 4,552,281, Cl. 220-5.00A.
Owens-Illinois, Inc.: *See—*
Chang, Long F.; and Patek, Frank, Jr., 4,552,275, Cl. 215-12.00R.
Mueller, Bruce M.; and Swierczek, Zbignew, 4,552,279, Cl. 215-318.000.
OXIMETRIX, Inc.: *See—*
Pastrone, Giovanni, 4,552,336, Cl. 251-331.000.
Oy Helvar: *See—*
Sairanen, Martti; and Virta, Matti, 4,553,070, Cl. 315-209.00R.
Oy Pajakanta AB: *See—*
Niemi, Pertti K., 4,552,333, Cl. 251-149.900.
Oy Wartsila Ab: *See—*
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Oya, Masayuki: *See—*
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,969, Cl. 548-179.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.
Oyama, Yoshishige: *See—*
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.
Ozin, Geoffrey A.; Nazar, Linda F.; and Hugues, Francois. Metal zeolite catalyst preparation. 4,552,855, Cl. 502-74.000.
Pace, Incorporated: *See—*
Zovko, Carl B.; and Vogel, Alan D., 4,552,300, Cl. 228-20.000.
Pace, Laurel J.: *See—*
McColgin, William C.; and Pace, Laurel J., 4,553,153, Cl. 357-30.000.
Pace, W. G.: *See—*
Hardy, Thomas G., Jr.; Kaganov, A. L.; and Pace, W. G., 4,552,148, Cl. 128-334.00C.
Padgett, H. Pat: *See—*
Fisher, Gary H.; and Padgett, H. Pat, 4,552,303, Cl. 236-44.00C.
Page, Edmund J.: *See—*
Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., 4,552,410, Cl. 303-23.00R.
Pall Corporation: *See—*
Gravatt, Barton A., 4,552,570, Cl. 55-20.000.
Palma, Grazio: *See—*
Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, 4,552,726, Cl. 422-184.000.
Panster, Peter; and Grethe, Horst, to Degussa Aktiengesellschaft. Organopolysiloxanes containing sulphonate groups, method for the production and use thereof. 4,552,700, Cl. 556-9.000.
Papazian, Arthur S. Electronic gas valve pulsator. 4,552,304, Cl. 236-46.00F.
Papenfuhs, Theodor: *See—*
Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, 4,552,970, Cl. 548-543.000.
Paris, Jean: *See—*
Morell, Joseph; Paris, Jean; and Petrini, Roland, 4,551,933, Cl. 36-120.000.
Paris, John. Unit-soled shoe. 4,551,929, Cl. 36-11.000.
Parker, Frederick D., to United Technologies Corporation. Cutting tool having cylindrical ceramic insert. 4,552,491, Cl. 407-107.000.
Parker, James P.: *See—*
Harris, Robert D., Jr.; Parker, James P.; and King, Charles L., 4,552,603, Cl. 156-167.000.
Parker, Lanny L., to Codex Corporation. High speed drive circuit. 4,553,043, Cl. 307-270.000.
Parks, Ralph P., Jr.: *See—*
Roche, William J.; and Parks, Ralph P., Jr., 4,553,067, Cl. 313-546.000.
Parsons, Stanley M., to University of California. 2α, 3β, 4aβ, 8aα-Decahydro-3-(4-phenyl-1-piperidinyl)-2-naphthalenol. 4,552,965, Cl. 546-206.000.
Parthasarathi, Arvind, to Olin Corporation. Preparation for improving the adhesion properties of metal foils. 4,552,627, Cl. 204-27.000.
Partington, Sally; and Carter, Steven F., to British Telecommunications. Glasses and methods for making them. 4,552,850, Cl. 501-37.000.
Parton, Joseph W.: *See—*
Koppel, Gary A.; Barton, Russell L.; Bewley, Jesse R.; Briggs, Stephen L.; and Parton, Joseph W., 4,552,888, Cl. 514-474.000.
Pas, Rene J. T. M. Flower merchandising display. 4,551,943, Cl. 47-41.00R.
Paschen, Rolf: *See—*
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.
Pass & Seymour, Inc.: *See—*
Drapkin, William B., 4,552,421, Cl. 339-14.00R.
Pass, Shimeon: *See—*
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, 4,552,922, Cl. 525-54.110.
Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Protective helmet having a cooling harness. 4,551,858, Cl. 2-7.000.
Pastor, Stephen D.: *See—*
Spivack, John D.; and Pastor, Stephen D., 4,552,926, Cl. 524-219.000.
Pastrone, Giovanni, to OXIMETRIX, Inc. Liquid flow regulator. 4,552,336, Cl. 251-331.000.
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, to Yeda Research & Development Co. Ltd. Method for multipolymer synthesis of organic compounds. 4,552,922, Cl. 525-54.110.
Patek, Frank, Jr.: *See—*
Chang, Long F.; and Patek, Frank, Jr., 4,552,275, Cl. 215-12.00R.
Patel, Kirit, to FAG Kugelfischer Georg Schafer (KGaA). Apparatus for the false twisting of threads using friction disks. 4,551,970, Cl. 57-339.000.
Patel, Shantilal G.; and Bell, William D., to International Playtex, Inc. Methods for preparing warp knitted fabrics. 4,551,892, Cl. 28-166.000.
Patterson, Ann D.; and Kachel, Wayne M., to Exxon Research and Engineering Co. Fluid coking with quench elutriation using industrial sludge. 4,552,649, Cl. 208-127.000.
Patterson, Elizabeth L., to Intel Corporation. MOS Isolation processing. 4,551,910, Cl. 29-576.00W.
Paukovits, Edward J., Jr.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Philip E.; Nguyen, Hung T.;

Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Paulson, Rollie W. Vibration free turntable apparatus. 4,553,230, Cl. 369-263.000.

Pawlak, Stephen M., to SCM Corporation. Ribbon feed mechanism. 4,552,473, Cl. 400-208.000.

Pawlowski, Henry A.: *See—*
Barker, Robert I.; King, David P.; and Pawlowski, Henry A., 4,552,025, Cl. 73-846.000.

Pawlowski, Thomas D.: *See—*
Bohrer, Timothy H.; Pawlowski, Thomas D.; and Brown, Richard K., 4,553,010, Cl. 219-10.55E.

Pay, Clifford R.; and Thornton, F. James, to Norton Christensen, Inc. Rotating pilot core bit for use in highly fractured formations. 4,552,231, Cl. 175-330.000.

Payne, Charles C., to Nalco Chemical Company. Prevention of silica migration in thermal insulation with water-soluble salts of inorganic oxygen-containing acids or acidic gases. 4,552,804, Cl. 428-283.000.

Payne, David W.: *See—*
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.

Payne, Jehugh A. Portable climbing device. 4,552,248, Cl. 182-142.000.

Peacock, Frank A.: *See—*
Sinha, Uday K.; and Peacock, Frank A., 4,552,200, Cl. 164-454.000.

Pearson, Glenn A. Fire retardant powders and methods. 4,552,803, Cl. 428-262.000.

Pech, Georg: *See—*
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.

Pedain, Josef: *See—*
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.

Pedersen, Sven: *See—*
Iannicelli, Joseph; Caspersen, Leif; Hansen, Jan; and Pedersen, Sven, 4,552,734, Cl. 423-230.000.

Peel, Geoffrey C., to U.S. Philips Corporation. Television transmitter. 4,553,162, Cl. 358-144.000.

Peery, John R.: *See—*
Eckenhoff, James B.; Peery, John R.; and Landrau, Felix A., 4,552,561, Cl. 604-896.000.

Peeters, Hugo J. P.: *See—*
Debuysscher, Pierre L.; Peeters, Hugo J. P.; and Hennebel, Christiaan G. M. M., 4,553,233, Cl. 370-16.000.

Peiffer, Dennis G.: *See—*
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Perkin-Elmer Corporation, The: *See—*
Colombo, Paul, 4,553,022, Cl. 219-275.000.

Perlstein, Jerome H.: *See—*
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Permutare Corporation: *See—*
Gallup, William; and Schmidt, Detleff W. P., 4,552,512, Cl. 417-3.000.

Perri, Joseph A.: *See—*
Labate, Michael D.; and Perri, Joseph A., 4,552,343, Cl. 266-200.000.

Personal Products Company: *See—*
Kopolow, Stephen L., 4,552,618, Cl. 162-157.100.
Tritsch, Ludwig, 4,552,560, Cl. 604-390.000.

Persson, Bo G.; and Spicar, Erich, to Asea Aktiebolag. Insulated conductor for transformer windings and other inductive apparatus. 4,552,990, Cl. 174-117.0FF.

Petersen, Allan E.: *See—*
Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., 4,552,730, Cl. 423-82.000.

Petersen, Helmuth, to Berliner Elektronenspeicherring Gesellschaft. Plane-grating monochromator. 4,553,253, Cl. 378-084.000.

Peterson, John A.: *See—*
Abegg, M. Taylor; Peterson, John A.; Jessop, Harvey A., deceased; and Lavery, Ormond F., personal representative, 4,552,597, Cl. 149-2.000.

Peterson, Robert D.; and Penner, Wayne A., to Mobil Oil Corporation. Serial floating point formatter. 4,553,133, Cl. 340-347.0DD.

Peterson, Steven H.: *See—*
Byers, William A.; and Peterson, Steven H., 4,553,034, Cl. 250-458.100.

Peting, Robert G., to AMSTED Industries Incorporated. Boltless restrained pipe joint. 4,552,385, Cl. 285-111.000.

Petrantoni, Joseph. Chambered cooler. 4,551,988, Cl. 62-457.000.

Petrini, Roland: *See—*
Morell, Joseph; Paris, Jean; and Petrini, Roland, 4,551,933, Cl. 36-120.000.

Petrolite Corporation: *See—*
Millar, Scott W., 4,552,591, Cl. 106-18.330.

Pfeifer, William: *See—*
Lacefield, William B.; and Pfeifer, William, 4,552,982, Cl. 564-164.000.

Pfister, Jean-Francois, to Societe Industrielle de Sonceboz S.A. Configuration and bearing for a motor-driven linear actuator. 4,553,056, Cl. 310-80.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.

Phelps, Douglas W., Jr.: *See—*
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.0S.

Philips Medical Systems: *See—*
Kanerva, Heikki, 4,553,255, Cl. 378-110.000.

Phillips Petroleum Company: *See—*
McDaniel, Max P., 4,552,937, Cl. 526-125.000.
Porter, Randall A.; and Reed, Larry E., 4,552,643, Cl. 208-48.0AA.
Stapp, Paul R., 4,552,646, Cl. 208-90.000.
Wiley, Bruce F., 4,552,011, Cl. 73-4.00R.
Wu, Yulin; and Mumallah, Naim A., 4,552,217, Cl. 166-270.000.

Phillips, Richard B.: *See—*
Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., 4,552,892, Cl. 514-531.000.

Phillips, Robert R.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; and Phillips, Robert R., 4,552,916, Cl. 524-399.000.

Picker International Limited: *See—*
Randell, Christopher P., 4,553,096, Cl. 324-309.000.
Young, Ian R., 4,553,122, Cl. 335-296.000.

Piduch, Hans-Gunter: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,552,622, Cl. 202-241.000.

Piechota, John L.: *See—*
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., 4,553,192, Cl. 361-395.000.

Pike, Andrew J.: *See—*
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.

Piller, Gerard: *See—*
Burckhardt, Christof W.; Stauber, Philipp; and Piller, Gerard, 4,552,028, Cl. 73-862.040.

Pilost, Daniel, to International Business Machines Corp. Analog-to-digital converter. 4,553,128, Cl. 340-347.0AD.

Pioneer Electronic Corporation: *See—*
Hasegawa, Tsunao, 4,553,180, Cl. 360-74.400.
Hashimoto, Takashi, 4,553,204, Cl. 364-200.000.
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, 4,553,257, Cl. 381-57.000.

Pioneer Industrial Components, Inc.: *See—*
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,552,243, Cl. 181-169.000.

Pirota, Franco, to Saes Getters S.p.A. Getter assembly with improved support. 4,553,065, Cl. 313-481.000.

Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Flavoring with 4(hydrocarbylthio)acetoacetic esters. 4,552,770, Cl. 426-535.000.

Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, to ANT Nachrichtentechnik GmbH. Surge protection device. 4,553,189, Cl. 361-119.000.

Placke, Dale L.: *See—*
Nagy, Charles S.; Placke, Dale L.; Gross, Jack R.; and Granzow, Robert H., 4,552,350, Cl. 271-3.000.

Plastic Profiles, Inc.: *See—*
Hoffman, Michael K., 4,551,881, Cl. 16-199.000.

Platter, Helmuth, to Leitner S.p.A. Hydraulically controlled bulldozer-blade. 4,552,226, Cl. 172-815.000.

Pletsch, Hubert: *See—*
Wolf, Franz J.; and Pletsch, Hubert, 4,552,543, Cl. 464-83.000.

Plonczak, Garold W.: *See—*
Brown, Stanley F.; and Plonczak, Garold W., 4,553,183, Cl. 360-98.000.

Plummer, Ernest L.; Engel, John F.; and Phillips, Richard B., to FMC Corporation. Acaricidal difluoroethenylcyclopropanecarboxylates. 4,552,892, Cl. 514-531.000.

Pneumo Corporation: *See—*
Hrusch, Louis C., 4,552,324, Cl. 244-104.0FP.

Poch, Leonard J.: *See—*
Babuka, Robert; Piechota, John L.; and Poch, Leonard J., 4,553,192, Cl. 361-395.000.

Podszun, Wolfgang; Bley, Fritjof; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Polymerizable dental compositions and molded dental articles produced therefrom. 4,552,906, Cl. 523-115.000.

Polaschegg, Hans-Dietrich; and Mathieu, Bernd, to Fresenius AG. Pump system for use with dialysis and like apparatus. 4,552,552, Cl. 604-4.000.

Poldner, Erich, to Filterwerk Mann & Hummel GmbH. Safety device for clamping screws on pressurized fluid receptacles. 4,552,283, Cl. 220-304.000.

Pollack, Frank S., Jr., to Honeywell Information Systems Inc. Decoupling apparatus for verification of a processor independent from an associated data processing system. 4,553,201, Cl. 364-200.000.

Polychrome Corp.: *See—*
Eklund, Nils; and Huang, Jen-chi, 4,552,827, Cl. 430-160.000.

Pomini Farrel S.p.A.: *See—*
Mantovan, Gianfranco, 4,552,007, Cl. 72-239.000.

Poole, Burnet M., to Ampex Corporation. Method and apparatus for recording and reproducing television or other broad band signals with an altered time base effect. 4,553,185, Cl. 360-10.100.

Poole, William L. Mini-desk. 4,552,419, Cl. 312-281.000.

Porchia, Salvatore. Flexible macro expansion process. 4,553,205, Cl. 364-300.000.

Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Antifoulants for thermal cracking processes. 4,552,643, Cl. 208-48.0AA.

Potter, Gary J., to Cambridge Engineering, Inc. Flow measurement for exhaust-type canopy and ventilating hood. 4,552,059, Cl. 98-115.100.

Pouxe, Joseph: *See—*
Ballon, Jean; Comparat, Vincent; and Pouxe, Joseph, 4,553,062, Cl. 313-93.000.

Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., to United States Gypsum Company. Gas desulfurization reactant. 4,552,683, Cl. 252-189.000.

Powell, Harry: *See—*
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Powell, Thomas M.: *See—*
Cummins, Michael A.; and Powell, Thomas M., 4,552,506, Cl. 414-735.000.

Powercube Corporation: *See—*
Chan, Edward Y.; Henderson, Ross; and Vaudo, Anthony J., 4,553,198, Cl. 363-56.000.

PPG Industries, Inc.: *See—*
Black, Donald J.; and Tang, Robert H., 4,552,682, Cl. 252-186.260.

Prater, Cordell E., to Texas Instruments Incorporated. PMOS Input buffer compatible with logic inputs from an NMOS microprocessor. 4,553,051, Cl. 307-475.000.

Preiswerk, Werner; and Bruttel, Beat, to Ciba Geigy Corporation. Process for preventing the gelation of concentrated aqueous photoactivator solutions. 4,552,562, Cl. 8-101.000.

Prester, Lorrain W. Lamp. 4,553,195, Cl. 362-310.000.

Presti, Francis A., Jr. Shower stall threshold. 4,551,870, Cl. 4-613.000.

Prince Manufacturing Company: *See—*
Foxwell, W. John, 4,552,055, Cl. 92-5.00R.

Procter & Gamble Company, The: *See—*
Cooper, Eugene R.; Loomans, Maurice E.; and Fawzi, Mahdi B., 4,552,872, Cl. 514-175.000.
Elm, Chance R.; and Lowrey, Erlend R., 4,552,753, Cl. 424-66.000.
Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., 4,552,680, Cl. 252-102.000.
Koger, Thurman J., II; Farrington, Theodore E., Jr.; and Weinshenker, Eugene, 4,552,709, Cl. 264-504.000.
Tse, Hing-Cheung, 4,552,776, Cl. 426-597.000.

Professional Medical Products, Inc.: *See—*
Reed, Albert D., 4,551,872, Cl. 5-445.000.

Prohl, Melvin A.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.

Prop, Gerrit: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Protector Agentur AB: *See—*
Uustalu, Jaan M., 4,552,817, Cl. 428-423.700.

Prottengeier, Manfred, to Doboy Verpackungsmaschinen GmbH. Welding and separating apparatus for plastic films. 4,551,965, Cl. 53-463.000.

Provesan, SA: *See—*
Esteve-Soler, Jose, 4,552,882, Cl. 514-300.000.

Provost, Lawrence A., to Kent-Moore Corporation. Crankshaft seal installing tool. 4,551,898, Cl. 29-235.000.

Puckett, Paul B., to Nature's Window, Inc. Animal enclosure. 4,552,093, Cl. 119-17.000.

Pudenz-Schulte Medical Research Corp.: *See—*
Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, 4,552,553, Cl. 604-9.000.

Pugar, Eloise A.: *See—*
Morgan, Peter E. D.; and Pugar, Eloise A., 4,552,740, Cl. 423-344.000.

Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, to Ciba Geigy AG. Process for producing a suspension of cyanuric chloride in water. 4,552,959, Cl. 544-190.000.

Purdy, Ricky A. Deer stand. 4,552,247, Cl. 182-116.000.

Purser, Kenneth H., to General Ionex Corporation. Wafer holding apparatus for ion implantation. 4,553,069, Cl. 315-111.810.

Purves, Robert B., to Boeing Company, The. Apparatus and method for temperature estimation of overhead conductors. 4,553,092, Cl. 324-106.000.

Putt, Ronald A.: *See—*
Gibbard, Henry F.; Murray, Richard C., Jr.; Putt, Ronald A.; Valentine, Theodore W.; and Menard, Claude J., 4,552,821, Cl. 429-57.000.

Puyo, Philippe; and Bouvet, Lucien, to A.B.F. Industrie S.A. Apparatus for measuring the gradient or inclination of a surface or of a line. 4,551,921, Cl. 33-366.000.

Quaintance, Roger L.: *See—*
Jacobson, Wayne M.; and Quaintance, Roger L., 4,552,489, Cl. 406-39.000.

Quarrell, Richard; and Ranson, Paul A., to General Mills Products Corp. Jewelry container. 4,552,264, Cl. 206-45.140.

Quigley, Vincent P.: *See—*
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,552,921, Cl. 525-96.000.

Quilmalz, Wolfram: *See—*
Huber, Guntram; Moller, Hermann; Faust, Eberhard; Andres, Rudolf; and Quilmalz, Wolfram, 4,552,402, Cl. 297-284.000.

R. J. Reynolds Tobacco Company: *See—*
Holt, Dewey L., 4,551,897, Cl. 29-235.000.

R W M-Raster-Werkzeugmaschinen GmbH: *See—*
Rotzler, Frank, 4,552,294, Cl. 226-142.000.

Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., to Ashland Oil, Inc. Sag resistant at essentially 1:1 ratio two component adhesive. 4,552,934, Cl. 525-458.000.

Racz, Gabor B.; and Lewis, Royce C., Jr. Lumbar belt. 4,552,135, Cl. 128-78.000.

Raddatz, Siegfried: *See—*
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.

Rademan, Jerry E.: *See—*
Gabriele, Peter D.; and Rademan, Jerry E., 4,552,885, Cl. 514-316.000.

Radford, Steven R.; and Hyland, Craig R., to Norton Christensen, Inc. Externally powered core catcher. 4,552,229, Cl. 175-240.000.

Raduechel, Bernd: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Raeckelboom, Marc A. Strand guide. 4,552,321, Cl. 242-130.000.

Rafalowski, Stanley A., Jr.: *See—*
Czerwinski, Richard W.; Gregory, Graham W.; Miller, Richard H.; and Rafalowski, Stanley A., Jr., 4,552,909, Cl. 524-11.000.

Rais, John M. Bottle handle for plastic prong bottle. 4,552,396, Cl. 294-27.100.

Raj, Rishi; and Baik, Sunggi, to Cornell Research Foundation, Inc. Use of free silicon in liquid phase sintering of silicon nitrides and sialons. 4,552,711, Cl. 264-65.000.

Ralston, Paul H.; and Whitney, Sandra L., to Calgon Corporation. Stabilization of soluble manganese and its reaction products. 4,552,665, Cl. 210-697.000.

Ramachandran, Venkataraman, to Ethyl Corporation. Preparation of 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid. 4,552,963, Cl. 546-156.000.

Ramachandran, Venkataraman, to Ethyl Corporation. 4-(1-Chlorocyclohex-3-enyl)pyridines and preparation of 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid. 4,552,964, Cl. 546-156.000.

Ramamurthy, Arakalgud V., to Union Carbide Corporation. Process for reducing surface melt fracture during extrusion of ethylene polymers. 4,552,712, Cl. 264-85.000.

Randall, John M.: *See—*
Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., 4,553,191, Cl. 361-212.000.

Randell, Christopher P., to Picker International Limited. Nuclear magnetic resonance method and apparatus. 4,553,096, Cl. 324-309.000.

Randen, Neil A., to Minnesota Mining and Manufacturing Company. Substantive moisturizing compositions. 4,552,755, Cl. 424-81.000.

Randleman, Marvin T.: *See—*
Rabito, Thomas G.; Cline, Richard L.; Oswalt, Stephen M.; Randleman, Marvin T.; and Kimball, Michael E., 4,552,934, Cl. 525-458.000.

Randolph, Donald A.: *See—*
Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., 4,552,683, Cl. 252-189.000.

Rangaswamy, Avvari. Inflatable uterine hemostat. 4,552,557, Cl. 604-96.000.

Ranken, Paul F.; and Walter, Thomas J., to Ethyl Corporation. 2-Nitro-4-(4-pyridinyl) benzoic acids and derivatives. 4,552,966, Cl. 546-290.000.

Ranson, Paul A.: *See—*
Quarrell, Richard; and Ranson, Paul A., 4,552,264, Cl. 206-45.140.

Rapps, Peter: *See—*
Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, 4,552,437, Cl. 350-339.00R.

Raskov, Herman E. Insulated electric heating element. 4,553,025, Cl. 219-461.000.

Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., to TRW Inc. Easily schedulable horizontal computer. 4,553,203, Cl. 364-200.000.

Raudat, John L.; and Thompson, Timothy H., to Standard-Knapp, Inc. Article grouper for case packer. 4,552,261, Cl. 198-425.000.

Raudys, Vytas: *See—*
Kupcikevicius, Vytautas; and Raudys, Vytas, 4,551,884, Cl. 17-49.000.

Ravid, Amotz: *See—*
Hoag, Ethan D.; and Ravid, Amotz, 4,552,439, Cl. 350-610.000.

Ray, Isaac. Entrance dust arrester. 4,551,879, Cl. 15-301.000.

Ray, Thomas E.: *See—*
Hoenstine, James M.; and Ray, Thomas E., 4,552,539, Cl. 441-66.000.

Raychem Corporation: *See—*
Larsson, Peter L., 4,551,915, Cl. 29-858.000.
Yaeger, John R.; and Morgan, Robert K., 4,551,974, Cl. 60-527.000.

RCA Corporation: *See—*
Acampora, Alfonse, 4,553,158, Cl. 358-31.000.
Batterman, Eric P., 4,553,042, Cl. 307-263.000.
Dingwall, Andrew G. F.; and Zazzu, Victor, 4,553,132, Cl. 340-347.0DA.
Hurst, Robert N., Jr.; and Dischert, Robert A., 4,553,157, Cl. 358-27.000.

Readyseal Limited: *See—*
Chick, Douglas K., 4,552,183, Cl. 138-99.000.

Reanal Finomvegyszergyar: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
Reardon, Edward J.; and Lipson, Melvin A., to Dynachem Corporation. Carbonylic halides as activators for phototropic compositions. 4,552,830, Cl. 430-281.000.
Redl, Simon; and Wolfseder, Alfons. Apparatus for the continuous boiling of wort. 4,552,060, Cl. 99-278.000.
Reed, Albert D., to Professional Medical Products, Inc. Orthopedic traction frame. 4,551,872, Cl. 5-445.000.
Reed, Edward D., Jr.: *See*—
Benedict, George J.; Reed, Edward D., Jr.; and Jones, Robert W., 4,553,244, Cl. 372-95.000.
Reed, Larry E.: *See*—
Porter, Randall A.; and Reed, Larry E., 4,552,643, Cl. 208-48.0AA.
Reed, Todd R., to International Business Machines Corporation. Analog adaptive magnitude equalizer. 4,553,248, Cl. 375-14.000.
Reed, William R., Jr.: *See*—
Komanduri, Ranga; and Reed, William R., Jr., 4,552,492, Cl. 407-114.000.
Regelman, Dale F.: *See*—
Alberino, Louis M.; Regelman, Dale F.; and Vespoli, Nancy P., 4,552,945, Cl. 528-62.000.
Regie Nationale des Usines Renault: *See*—
Boccadoro, Yves; and Chastagner, Paul, 4,552,109, Cl. 123-339.000.
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game having stackable tiles and moveable playing pieces. 4,552,363, Cl. 273-241.000.
Reid, Lorne S. Method for separating lysozyme from egg-white. 4,552,845, Cl. 435-206.000.
Reid, Robert A., to CPC Engineering Corporation. Wear ring mount for lift pumps. 4,552,508, Cl. 415-72.000.
Reifenhauser GmbH & Co. Maschinenfabrik: *See*—
Halter, Hartmut, 4,552,317, Cl. 242-65.000.
Reinecke, Paul: *See*—
Marzolph, Gerhard; Blank, Heinz U.; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,552,890, Cl. 514-425.000.
Reinelt, Werner: *See*—
Krieger, Karl; and Reinelt, Werner, 4,552,172, Cl. 137-484.600.
Reiss, John R.: *See*—
Balukin, Richard F.; and Reiss, John R., 4,552,412, Cl. 303-67.000.
Relyveld, Edgar H.; and Henocq, Emile, to Institut Pasteur. Allergenic compositions. 4,552,756, Cl. 424-88.000.
Reneault, Patrick; and Ovaert, Francis, to SMAC Acieroid. Exterior insulating element and cladding employing such elements. 4,551,958, Cl. 52-309.400.
Research Corporation: *See*—
Goodman, Irving; and Hiatt, Robert B., 4,552,764, Cl. 514-2.000.
Reust, Dennis K., to Conoco Inc. Apparatus and method for compensating roll of a scanner platform. 4,553,028, Cl. 250-201.000.
Reuter, Herbert: *See*—
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, 4,552,681, Cl. 252-140.000.
Revett, Lowell W., to Halliburton Company. Spiral gun apparatus. 4,552,234, Cl. 175-4.600.
Reynolds, George A.: *See*—
Chen, Chin H.; Goliber, Thomas E.; Perlstein, Jerome H.; and Reynolds, George A., 4,552,825, Cl. 430-83.000.
Reynolds, James F.: *See*—
Davis, Paul J.; and Reynolds, James F., 4,552,759, Cl. 424-93.000.
Reysman, Marjan. Spinning disc toy. 4,552,542, Cl. 446-254.000.
Rhodes, Edward: *See*—
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,552,098, Cl. 122-379.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Desbois, Michel, 4,552,984, Cl. 568-29.000.
Riberi, Bernd: *See*—
Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, 4,552,946, Cl. 528-67.000.
Rich Products Corporation: *See*—
Kahn, Marvin L.; and Lynch, Robert J., 4,552,773, Cl. 426-564.000.
Rich, Robert A.: *See*—
Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., 4,552,023, Cl. 73-715.000.
Richardson, Robert D.; and Leanhart, Thomas B. Protective shield device for use with medicine vial and the like. 4,552,277, Cl. 215-249.000.
Ricoh Co., Ltd.: *See*—
Suzaki, Masayuki; and Kanno, Tetuo, 4,552,475, Cl. 400-144.200.
Yano, Takashi, 4,553,149, Cl. 346-153.100.
Ricouard, Jacques; and Chappoux, Claude, to L.A. Ricouard S.A.; and Ronis S.A. Baggage closure. 4,551,998, Cl. 70-69.000.
Riffer, Richard, to California and Hawaiian Sugar Company. Enzyme electrode and method for dextran analysis. 4,552,840, Cl. 435-14.000.
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., to International Business Machines Corporation. Process of hot isostatic pressing of ferrite material. 4,552,710, Cl. 264-64.000.
Riley, Danny A.; and Bain, James L. W., to Medical College of Wisconsin, The. Nerve identification method. 4,552,145, Cl. 128-630.000.
Riley, George R.: *See*—
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.
Rinker, Debra Kay: *See*—
Brown, James E., 4,551,942, Cl. 47-14.000.
Riseman, Jacob: *See*—
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.
Risley, John R., to International Harvester Company. Tractor-trailor brake acceleration system. 4,552,398, Cl. 303-7.000.
Robert Bosch GmbH: *See*—
Auer, Hugo, 4,552,613, Cl. 156-515.000.
Gantenbrink, Karl; Knoll, Peter; and Rapps, Peter, 4,552,437, Cl. 350-339.00R.
Roberts, Douglass B.: *See*—
McClure, Scott G., 4,552,779, Cl. 427-2.000.
Roche, William J.; and Parks, Ralph P., Jr., to GTE Products Corporation. Method of dispensing mercury into a fluorescent lamp and lamp to operate with method. 4,553,067, Cl. 313-546.000.
Rochester, James R.: *See*—
Glaser, Michael S.; and Rochester, James R., 4,552,454, Cl. 356-5.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Furniture hinge including axle members mounting hinge links to hinge casing. 4,551,883, Cl. 16-370.000.
Rockwell International Corporation: *See*—
Centala, John P., 4,553,210, Cl. 364-434.000.
Domino, William J.; Havens, Donald P.; and Johnson, Robert A., 4,553,060, Cl. 310-333.000.
Moore, Larry V., 4,552,391, Cl. 292-5.000.
Morgan, Peter E. D.; and Pugar, Eloise A., 4,552,740, Cl. 423-344.000.
von Bieren, Karlheinz, 4,552,435, Cl. 350-169.000.
Warren, Leslie F., 4,552,927, Cl. 525-279.000.
Wiers, John W., 4,552,405, Cl. 297-375.000.
Young, James P., 4,553,108, Cl. 330-300.000.
Rogers, Scott A. Analogue dial calculator/wrist watch. 4,552,464, Cl. 368-10.000.
Rogo, Casimir; and Lenz, Herman N., to Teledyne Industries, Inc. Turbine engine variable geometry device. 4,552,308, Cl. 239-457.000.
Rohm and Haas Company: *See*—
Amick, David R., 4,552,752, Cl. 424-21.000.
Rollett, John M., to British Telecommunications. RC-Active filters. 4,553,103, Cl. 330-107.000.
Rolls-Royce Inc.: *See*—
Szuminski, Gary F.; and Jones, Thomas J., 4,552,309, Cl. 239-265.190.
Rolls-Royce Ltd.: *See*—
Mills, David, 4,552,197, Cl. 164-34.000.
Mills, David; and Kington, Alan D., 4,552,198, Cl. 164-122.200.
Szuminski, Gary F.; and Jones, Thomas J., 4,552,309, Cl. 239-265.190.
Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Crimpable capping assembly for a centrifuge tube. 4,552,278, Cl. 215-277.000.
Rome, Charles P.: *See*—
Nall, Kent J.; Barteldes, W. Christopher; Payne, David W.; Rome, Charles P.; and Abrams, Wayne A., 4,552,120, Cl. 124-1.000.
Ronen, Ya'Acov: *See*—
Grynberg, Ami; and Ronen, Ya'Acov, 4,553,135, Cl. 340-564.000.
Ronis S.A.: *See*—
Ricouard, Jacques; and Chappoux, Claude, 4,551,998, Cl. 70-69.000.
Roop, Stevie C., to Medeco Security Locks, Inc. High security T-handle assembly. 4,552,001, Cl. 70-208.000.
Root, Lois J.: *See*—
Chebiniak, Paul; Kaschak, Ronald A.; and Root, Lois J., 4,552,787, Cl. 427-304.000.
Rosemount Inc.: *See*—
Marxer, John E.; and Kowles, John W., 4,553,137, Cl. 340-582.000.
Rosenquist, Niles R.; and Tyrell, John A., to General Electric Company. Compatibilization of polycarbonate blends. 4,552,924, Cl. 525-146.000.
Rosenwaks, Salman; and Chuchem, David. Chemical laser. 4,553,243, Cl. 372-89.000.
Rosenwinkel, Donald A.: *See*—
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.
Rosin, Michael L.: *See*—
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,552,917, Cl. 524-590.000.
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Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., to Mobil Oil Corporation. Fluidized catalytic cracking process. 4,552,648, Cl. 208-120.000.
Ross, Edward E., to Del Monte Corporation. Machine and method for cleaning can flanges. 4,552,189, Cl. 141-80.000.
Ross, Joseph L.: *See*—
Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., 4,552,645, Cl. 208-80.000.
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Asato, Goro; and Ross, Lawrence J., 4,552,897, Cl. 514-554.000.
Ross, Richard J.; and Speller, David J., to Baker Oil Tools, Inc. Unloading injection control valve. 4,552,218, Cl. 166-319.000.
Rotron Incorporated: *See*—
Brown, Fred A.; and Grouse, Alan F., 4,553,075, Cl. 318-254.000.
Rotzler, Frank, to R W M-Raster-Werkzeugmaschinen GmbH. Gripping feeder for strip or wire stock. 4,552,294, Cl. 226-142.000.
Rovedo, Nivo: *See*—
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.

Rowlett, Harold G.: *See*—
Nickow, Hy; Nickow, Martin A.; and Rowlett, Harold G., 4,552,479, Cl. 402-74.000.

Rubin, Mae K., to Mobil Oil Corporation. Synthesis of crystalline silicate ZSM-12. 4,552,738, Cl. 423-328.000.

Rudolphy, Albert; and Werner, Gerhard, to Hoechst Aktiengesellschaft. Process for preparing printing ink binders, and their use in printing inks. 4,552,592, Cl. 106-30.000.

Ruetgerswerke Aktiengesellschaft: *See*—
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, 4,552,575, Cl. 62-544.000.

Rumancik, Joseph A.: *See*—
Impink, Albert J., Jr.; Rumancik, Joseph A.; and Easter, James P., 4,552,718, Cl. 376-216.000.

Rummelsburg, Al S., to Kidde Consumer Durables Corp. Cookware bottom wall structure. 4,552,284, Cl. 220-453.000.

Rung, Chester E. Mailbox with indicator flags. 4,552,302, Cl. 232-35.000.

Rusciguo, Harry G., to Advanced Medical Products, Inc. Pulsating hydrotherapy system. 4,552,132, Cl. 128-38.000.

Rutter, Larry J.: *See*—
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., 4,552,295, Cl. 226-195.000.

Ryobi Ltd.: *See*—
Ishikawa, Noritoki, 4,552,546, Cl. 474-82.000.

Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,552,798, Cl. 428-194.000.

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Saad, Saad S.; and Knop, Charles M., to Andrew Corporation. Overmoded tapered waveguide transition having phase shifted higher order mode cancellation. 4,553,112, Cl. 333-21.00R.

Saeed, Abdul, to Black & Decker Inc. Carbon brush with pin for limiting movement. 4,553,057, Cl. 310-242.000.

Saes Getters S.p.A.: *See*—
Pirota, Franco, 4,553,065, Cl. 313-481.000.

Sagara, Seiji; and Hasegawa, Yuuji, to Canon Kabushiki Kaisha. Variable magnification copying apparatus with margin erase. 4,552,447, Cl. 355-3.00R.

St. Clair, Terry L.; and Burks, Harold D., to United States of America, National Aeronautics and Space Administration. Process of end-capping a polyimide system. 4,552,931, Cl. 525-432.000.

St. Jude Children's Research Hospital: *See*—
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,757, Cl. 424-89.000.
Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,758, Cl. 424-89.000.

Sairanen, Martti; and Virta, Matti, to Oy Helvar. Electronic ballast for a discharge lamp. 4,553,070, Cl. 315-209.00R.

Saito, Junichi: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.

Saito, Takashi: *See*—
Kamiyama, Masayuki; Saito, Takashi; and Asai, Kiyotsugu, 4,552,944, Cl. 528-55.000.

Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, to Ma Ma Macaroni Co., Ltd. Process for preparing boiled noodles. 4,552,772, Cl. 426-557.000.

Sakabe, Yukio: *See*—
Kawabata, Kenji; and Sakabe, Yukio, 4,552,853, Cl. 501-134.000.

Sakaeda, Keiko: *See*—
Saskiki, Takashi; and Sakaeda, Keiko, 4,552,237, Cl. 177-25.000.

Sakaguchi, Fumio: *See*—
Hirota, Kiwami; Tamano, Hideki; and Sakaguchi, Fumio, 4,552,930, Cl. 525-333.800.

Sakai, Kazuo: *See*—
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.

Sakaki, Masayuki: *See*—
Tanigaki, Shuzo; and Sakaki, Masayuki, 4,553,139, Cl. 340-626.000.

Sakakibara, Naoji: *See*—
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,209, Cl. 364-431.070.

Sakakibara, Takashi: *See*—
Mori, Shuichi; Fukatsu, Yasumasa; and Sakakibara, Takashi, 4,553,257, Cl. 381-57.000.

Sakakibara, Yasuyuki: *See*—
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, to Nippon Piston Ring Co., Ltd. Method of manufacturing a rotor for a rotary fluid pump. 4,551,896, Cl. 29-156.40R.

Sakamaki, Hisashi: *See*—
Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, 4,552,450, Cl. 355-14.00R.

Sakamoto, Ryuji; and Yamazaki, Taro, to Toshiba Silicone Co., Ltd. Electroconductive silicone elastomer compositions. 4,552,688, Cl. 252-511.000.

Sakata, Hideo; and Yoda, Yukiji, to Mitutoyo Mfg. Co., Ltd. Measuring instrument. 4,551,919, Cl. 33-1.00M.

Sakata, Shinsuke: *See*—
Nakagawa, Shinichi; Asano, Kohzoh; Sakata, Shinsuke; Adachi, Tokio; and Kawachi, Shoji, 4,552,925, Cl. 525-200.000.

Saleeb, Fouad Z.; and Zeller, Bary L., to General Foods Corporation. Method of packaging coffee with carbon dioxide sorbent. 4,552,767, Cl. 426-395.000.

Salomon S.A.: *See*—
Morell, Joseph; Paris, Jean; and Petrini, Roland, 4,551,933, Cl. 36-120.000.

Sammons, Barry E.: *See*—
Struger, Odo J.; and Sammons, Barry E., 4,553,224, Cl. 364-900.000.

Samuelsen, Sigvart J.: *See*—
Marks, Robert; Phelps, Douglas W., Jr.; Samuelsen, Sigvart J.; and Ward, William C., 4,551,912, Cl. 29-576.00S.

Samuelsson, Bengt A. Method and apparatus for killing field weeds. 4,551,968, Cl. 56-16.400.

Sandbrook, Thomas D.; and Scandrol, Roy O., to Conoco Inc. Control of froth cell performance through the use of differential bubbler tubes. 4,552,651, Cl. 209-1.000.

Sanden Corporation: *See*—
Matsushita, Takashi, 4,552,005, Cl. 72-68.000.
Shimizu, Shigemi, 4,552,517, Cl. 418-55.000.

Sanders Associates, Inc.: *See*—
Butler, Jesse L., 4,553,146, Cl. 343-379.000.

Sanders, Royden C., Jr.; and Forsyth, John L. Dot matrix printers and print heads therefor. 4,552,064, Cl. 101-93.050.

Sane, Ajit Y.: *See*—
Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, 4,552,630, Cl. 204-67.000.

Sankyo Chemical Company, Limited: *See*—
Takaku, Hiroshi; and Noda, Takeshi, 4,552,955, Cl. 536-24.000.

Sankyo Company Limited: *See*—
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Sano, Tomomi: *See*—
Kawasaki, Kikuo; and Sano, Tomomi, 4,553,211, Cl. 364-479.000.

Sano, Yukinori; Hoshi, Yoshikazu; and Takahashi, Ikuo, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Apparatus for controlling the number of operative cylinders of a diesel engine. 4,552,114, Cl. 123-481.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Sumigawa, Yukio, 4,552,511, Cl. 416-242.000.

Santen Pharmaceutical Co., Ltd.: *See*—
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,969, Cl. 548-179.000.
Mita, Itaru; Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,552,765, Cl. 514-513.000.

Santostasi, Paul A.: *See*—
Dutt, Herbert V.; and Santostasi, Paul A., 4,552,328, Cl. 249-67.000.

Sanyo Electric Co., Ltd.: *See*—
Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, 4,553,011, Cl. 219-10.55B.

Saotome, Yoichiro: *See*—
Yoshida, Kei; and Saotome, Yoichiro, 4,551,946, Cl. 49-340.000.

Sarnezki, Herbert; and Hubner, Klemens, to Siemens Aktiengesellschaft. Mounting for data display equipment. 4,552,418, Cl. 312-242.000.

Saruyama, Toshio: *See*—
Mikami, Ryuzo; and Saruyama, Toshio, 4,552,919, Cl. 524-860.000.

Sasaki, Gen; and Kameyama, Shuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device. 4,551,911, Cl. 29-576.00W.

Sasaki, Makoto: *See*—
Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, 4,552,923, Cl. 525-68.000.

Sasaki, Susumu, to Fujitsu Limited. Multistage linear amplifier for a wide range of input signal levels. 4,553,105, Cl. 330-145.000.

Sasaki, Yasusuke, to Teijin Limited. Method and apparatus for switching yarn in turret-type winder. 4,552,313, Cl. 242-18.00A.

Sasatani, Seiei: *See*—
Inaba, Kohji; Sasatani, Seiei; Koide, Tatsushi; and Nanya, Tamio, 4,552,751, Cl. 424-19.000.

Sashida, Iwao: *See*—
Melillo, Louis; Haga, Tsutomu; and Sashida, Iwao, 4,552,243, Cl. 181-169.000.

Saskiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus. 4,552,237, Cl. 177-25.000.

Sass, Richard G., to National Electric Control Company. Miniature coaxial conductor pair and multi-conductor cable incorporating same. 4,552,989, Cl. 174-103.000.

Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, to Sumitomo Electric Industries, Ltd. Hot dipping method for forming a metal or alloy coating around an elongated body. 4,552,788, Cl. 427-374.500.

Sato, Shigeyuki; and Matsushita, Mitsumasa, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Epoxy resin composition. 4,552,907, Cl. 523-455.000.

Sato, Yo; Kashiwaba, Tadao; and Odajima, Akeshi, to Kabushiki Kaisha Sato. Automatic label winding and charging device for printers. 4,552,610, Cl. 156-384.000.

Satoh, Makoto: *See*—
Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, 4,552,414, Cl. 303-115.000.

Sauer, Wolfgang, to ITT Industries, Inc. Integrated circuit for color television receivers. 4,553,163, Cl. 358-158.000.

Saunders, Norman B. Dual storage heating and cooling system. 4,552,205, Cl. 165-18.000.

Sawicki, Gary: *See—*
Gould, Arnold S.; Sawicki, Gary; and Ciannella, Michael A., 4,552,554, Cl. 604-51.000.

Scandrol, Roy O.: *See—*
Sandbrook, Thomas D.; and Scandrol, Roy O., 4,552,651, Cl. 209-1.000.

Scanpump AB: *See—*
Olsson, Aron, 4,552,178, Cl. 137-625.460.

Scarpero, William J., Jr.: *See—*
Cha, Charles W.; Hartman, John W.; Kiesling, David A.; and Scarpero, William J., Jr., 4,553,049, Cl. 307-443.000.

Schabel, Amelia A.: *See—*
Nagarajan, Ramakrishnan; and Schabel, Amelia A., 4,552,701, Cl. 260-112.50R.

Scharmann GmbH & Co.: *See—*
Malzkorn, Matthias, 4,552,495, Cl. 409-136.000.

Schausberger, Christoph, to Bayerische Motoren Werke AG. Cylinder head of light metal for air-compressing, auto-igniting internal combustion engines. 4,552,108, Cl. 123-270.000.

Scheidecker, Ralph W.: *See—*
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., 4,552,710, Cl. 264-64.000.

Scheithauer, Richard A.: *See—*
Miller, Michael J.; Vogt, Martin C.; and Scheithauer, Richard A., 4,552,729, Cl. 423-55.000.

Schenck, Robert A.: *See—*
Bromley, Eric; and Schenck, Robert A., 4,552,360, Cl. 273-85.00G.

Schenk, Harold L., Jr.; and Junker, Warren R., to Westinghouse Electric Corp. Eddy current thickness gauge with constant magnetic bias. 4,553,095, Cl. 324-230.000.

Scherbatskoy, Serge A. Systems, apparatus and methods for measuring while drilling. 4,553,226, Cl. 367-83.000.

Schering Aktiengesellschaft: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Schiemann, Wolfram. Arrangement of fuel tanks for vehicles. 4,552,175, Cl. 137-571.000.

Schiff, Peter. Percutaneous intra-aortic balloon having an EKG electrode and a twisting stylet for coupling the EKG electrode to monitoring and/or pacing instrumentation external to the body. 4,552,127, Cl. 128-1.00D.

Schipper, Gerhard: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Schirmann, Jean-Pierre: *See—*
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Schlanger, Samuel L. Passenger restraint safety system. 4,552,381, Cl. 280-752.000.

Schlatter, Beat; and Schnyder, Eugen, to Sulzer-Escher Wyss Ltd. Rolling mill for sheet material. 4,552,008, Cl. 72-243.000.

Schlegel Lining Technology GmbH: *See—*
Hammer, Heiner I., 4,552,485, Cl. 405-184.000.

Schlingmann, Merten: *See—*
Keil, Karl-Heinz; Greiner, Ulrich; Engelhardt, Fritz; Kuhlein, Klaus; Keller, Reinhold; and Schlingmann, Merten, 4,552,905, Cl. 521-149.000.

Schlumberger Technology Corporation: *See—*
Clark, Brian, 4,553,097, Cl. 324-338.000.

Schmeckenbecher, Arnold F.: *See—*
Amendola, Albert; Schmeckenbecher, Arnold F.; and Sobon, Joseph T., 4,552,615, Cl. 158-659.100.

Schmid, Donald T. Building block. 4,551,959, Cl. 52-309.120.

Schmid, Karl; and Baumann, Horst, to Henkel Kommanditgesellschaft auf Aktien. Process for the preparation of fatty acid alkyl esters having improved processing properties. 4,552,702, Cl. 260-428.000.

Schmid, Rudolf, to Siemens Aktiengesellschaft. Gas laser with a spring-supported capillary. 4,553,240, Cl. 372-61.000.

Schmidt, Detleff W. P.: *See—*
Gallup, William; and Schmidt, Detleff W. P., 4,552,512, Cl. 417-3.000.

Schmidt, Dieter: *See—*
Bach, Eric; and Schmidt, Dieter, 4,553,254, Cl. 378-098.000.

Schmidt, Gerhard S. E. Coupling for pressure hose. 4,552,387, Cl. 285-238.000.

Schmidt, Terrence W., to Lockheed Missiles & Space Co., Inc. High-speed semisubmerged ship maneuvering system. 4,552,083, Cl. 114-61.000.

Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, to Hoesch Aktiengesselschaft. Hydraulic press. 4,552,524, Cl. 425-406.000.

Schmitt, Jurgen: *See—*
Behrens, Herbert; Schmitt, Jurgen; Marx, Rainer; Heidemann, Helmut; and Schipper, Gerhard, 4,553,148, Cl. 346-107.00R.

Schmitt, Peter C.: *See—*
Cannon, Lee E.; Schmitt, Peter C.; and Cheever, Dan R., 4,553,080, Cl. 318-696.000.

Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., to Bristol-Myers Company. 3α,15-Bis(chloroacetoxy)-4β-hydroxy-12,13-epoxytrichothec-9-ene useful as an antitumor agent. 4,552,971, Cl. 549-332.000.

Schneider, Helmut: *See—*
Hansen, Henning; and Schneider, Helmut, 4,551,900, Cl. 29-408.000.

Schneider, William A., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced resin tank with particular joint structure. 4,552,281, Cl. 220-5.00A.

Schneider, Wolfgang: *See—*
Dreher, Bernd; and Schneider, Wolfgang, 4,552,815, Cl. 428-415.000.

Schneidmiller, Rodney G. Insect trap selective for wasps. 4,551,941, Cl. 43-107.000.

Schnell, Hans, to Escher Wyss GmbH. Stirrer apparatus for paper stock. 4,552,462, Cl. 366-280.000.

Schnell, William J.: *See—*
Fentress, Philip W.; Kenley, Rodney S.; and Schnell, William J., 4,552,721, Cl. 422-28.000.

Schnelle, Eberhard; Jung, Hans-Ulrich; and Hetzel, Werner, to Stierlen-Maquet AG. Operating table. 4,552,346, Cl. 269-322.000.

Schnettler, Richard A.: *See—*
Dage, Richard C.; and Schnettler, Richard A., 4,552,880, Cl. 514-277.000.

Schnyder, Eugen: *See—*
Schlatter, Beat; and Schnyder, Eugen, 4,552,008, Cl. 72-243.000.

Schobel, Alexander M.; and Schumacher, Robert W., to Warner-Lambert Company. Method for deodorizing hypochlorite denture cleansing solutions and product containing a delayed release hypochlorite deactivator. 4,552,679, Cl. 252-90.000.

Schoch, Robert, to Weinmann GmbH & Co. KG. Ski boot construction. 4,551,932, Cl. 36-117.000.

Schoch, Robert, to Weinmann AG. Cycle wheel rim brake construction. 4,552,251, Cl. 188-24.210.

Schoffmann, Franz: *See—*
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.

Scholich, Peter, to Nixdorf Computer AG. Method and apparatus for recording data. 4,553,177, Cl. 360-43.000.

Scholl, Hans-Joachim; Pedain, Josef; Riberi, Bernd; and Mennicken, Gerhard, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates containing isocyanurate groups, the compounds which may be obtained according to this process, and the use thereof for the production of polyurethanes. 4,552,946, Cl. 528-67.000.

Schollenberger, Charles S., to B. F. Goodrich Company, The. Radiation curable polyurethanes. 4,552,932, Cl. 525-440.000.

Scholz, Harald: *See—*
Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, 4,552,727, Cl. 422-241.000.

Schorman, Eric: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,553,263, Cl. 455-54.000.

Schott, Jeffery L. Apparatus for breaking railroad rails. 4,552,291, Cl. 225-96.500.

Schotten, Alfons, to Eberhard Hoesch & Sohne GmbH & Co. Plate filter having a movable filter cloth. 4,552,660, Cl. 210-225.000.

Schubring, Allin W., to Square D Company. Pneumatic timing attachment for an electromagnetic device. 4,553,117, Cl. 335-61.000.

Schuchardt, Kurt; Scholz, Harald; Neuss, Hans W.; and Pech, Georg, to Hoechst Aktiengesellschaft. Cooling device. 4,552,727, Cl. 422-241.000.

Schulte, Rudolf R.; East, Gary P.; Bryant, Marga M.; and Heindl, Alfons, to Pudenz-Schulte Medical Research Corp. Flow control valve. 4,552,553, Cl. 604-9.000.

Schultshick, Robert, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for automatically displacing the radial position of a cross-feed slide in a cross-feed head of a cutting machine. 4,552,493, Cl. 408-3.000.

Schumacher, Robert W.: *See—*
Schobel, Alexander M.; and Schumacher, Robert W., 4,552,679, Cl. 252-90.000.

Schuppert, Leo V., Jr.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.

Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., to Eaton Corporation. Bidirectional power FET with field shaping. 4,553,151, Cl. 357-23.400.

Schwab, Adolf: *See—*
Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, 4,553,063, Cl. 313-325.000.

Schwarting, Fritz: *See—*
Zucker, Stanley; and Schwarting, Fritz, 4,552,341, Cl. 256-1.000.

Schwartz, Albert B.: *See—*
Rosinski, Edward J.; Schwartz, Albert B.; and Dwyer, Francis G., 4,552,648, Cl. 208-120.000.

Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, to Motoren- und Turbinen-Union Munchen GmbH. Arrangement for joining two relatively rotatable turbomachine components. 4,552,509, Cl. 415-135.000.

SCM Corporation: *See—*
Pawlak, Stephen M., 4,552,473, Cl. 400-208.000.

Scott, William L., to Eli Lilly and Company. 3-Mercaptomethyl-2-oxo-1-pyrrolidine acetic acids and use for hypertension. 4,552,889, Cl. 514-424.000.

Seaquist, James J.; and Harmon, Elred R., to Square D Company. High voltage terminal. 4,552,424, Cl. 339-32.00R.

Seehase, Jack C. Recoil pad utilizing struts disposed at a compound angle and having adjustable energy-absorbing characteristics. 4,551,937, Cl. 42-74.000.

Segalla, Ruggero, to Sky S.p.A. Feeding trough for flying animals, particularly turkeys, capable of regulating the level of the feed. 4,552,095, Cl. 119-53.000.

Segawa, Hirohisa: *See*—
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.

Segawa, Yasuhiko: *See*—
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,552,810, Cl. 428-398.000.

Seino, Tadashi: *See*—
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Seiter, Wolfgang: *See*—
Koch, Otto; Reuter, Herbert; and Seiter, Wolfgang, 4,552,681, Cl. 252-140.000.

Sekellick, Ron S., to Mott Metallurgical Corporation. Pneumatic hydro-pulse filter system and method of operation. 4,552,669, Cl. 210-798.000.

Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco Inc. Extended amine curing agents and epoxy resins cured therewith. 4,552,933, Cl. 525-454.000.

Selvaer, Ole-Kristian: *See*—
Boe, Jan; Haugland, Tor-Arvid; Selvaer, Ole-Kristian; and Kleiven, Atle, 4,552,086, Cl. 114-242.000.

Selvaggi, Victor E. Brassiere. 4,552,144, Cl. 128-510.000.

Sendzimir, Michael G.: *See*—
Turley, John W.; and Sendzimir, Michael G., 4,551,878, Cl. 15-102.000.

Sendzimir, Tadeusz. Intermediate accumulating system in processing strip material. 4,552,299, Cl. 228-5.700.

Sensenig, Darryl L.: *See*—
Colyer, Timothy D.; and Sensenig, Darryl L., 4,552,606, Cl. 156-280.000.

Senshu, Takao: *See*—
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.

Sente, Hirohisa: *See*—
Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, 4,553,016, Cl. 219-121.0LG.

Senzai, Ryosuke: *See*—
Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, 4,552,179, Cl. 137-625.650.

Seprodi, Janos: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Seroka, Helmut: *See*—
Hein, Karl; Hubig, Markus; and Seroka, Helmut, 4,552,342, Cl. 266-175.000.

Setzer, Helmut: *See*—
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Severinsson, Anders S.: *See*—
Johansson, Karl H.; and Severinsson, Anders S., 4,552,455, Cl. 356-5.000.

Sewell Plastics, Inc.: *See*—
Hunter, Burnis L., 4,552,527, Cl. 425-535.000.

SGS-ATES Componenti Elettronici SpA: *See*—
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, 4,553,046, Cl. 307-289.000.

Shaffer, Jeffery J. Method of playing strategy game. 4,552,364, Cl. 273-260.000.

Shai, Yechiel: *See*—
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, 4,552,922, Cl. 525-54.110.

Shaikh, Mujahid L.: *See*—
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.

Sharp Kabushiki Kaisha: *See*—
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.
Kozaki, Shuichi; Ishii, Yutaka; and Funada, Fumiaki, 4,552,436, Cl. 350-337.000.
Tsujii, Katsumi, 4,553,154, Cl. 357-71.000.

Shaw, Herbert J.; Digonnet, Michel J. F.; and Lacy, Robert A., to Leland Stanford University, The Board of Trustees of the. Fiber optic amplifier. 4,553,238, Cl. 372-6.000.

Shaw, Wilfrid G., to Standard Oil Company, The. Oxidation of unsaturated aldehydes. 4,552,978, Cl. 562-535.000.

Sheem, Sang K.: *See*—
Giallorenzi, Thomas G.; Sheem, Sang K.; and Taylor, Henry F., 4,552,457, Cl. 356-345.000.

Sheldon, William W.; and Axford, Theodore G., to Sheldon, William W. Retrieval of lobsters and other objects. 4,551,938, Cl. 43-4.500.

Shelton, William E. A., to Alan Shelton Limited. Handling of textile yarn. 4,551,927, Cl. 34-82.000.

Sheng, Wang. Stapling gun. 4,552,296, Cl. 227-109.000.

Shepard, Joseph F.: *See*—
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,551,906, Cl. 29-571.000.

Sheppard, Joseph R., to True Dimension Inc. Portable winch. 4,552,340, Cl. 254-358.000.

Shibata, Tomoyuki: *See*—
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Shibuya, Kunihiro: *See*—
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Shimamoto, Ichiji: *See*—
Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, 4,553,123, Cl. 336-83.000.

Shimizu, Shigemi, to Sanden Corporation. Scroll type fluid displacement apparatus and method of assembly. 4,552,517, Cl. 418-55.000.

Shimura, Takaki: *See*—
Miwa, Hirohide; Hayashi, Hajime; Shimura, Takaki; Iida, Atsuo; Namiki, Fumihiro; Kawabe, Kenji; and Nakao, Narutaka, 4,552,021, Cl. 73-644.000.

Shingu, Shitta: *See*—
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.

Shinkawa, Takao: *See*—
Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, 4,553,030, Cl. 250-307.000.

Shinki, Kiyoshi: *See*—
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Shinko-Pfaudler Company, Ltd.: *See*—
Matsumoto, Tadao; and Inoue, Kazuo, 4,552,724, Cl. 422-138.000.

Shinoda, Kazuo: *See*—
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Shionogi & Co., Ltd.: *See*—
Igarashi, Kikuo; and Honma, Tsunetoshi, 4,552,695, Cl. 260-239.30B.
Itoh, Shinji; and Moroji, Takashi, 4,552,865, Cl. 514-15.000.
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.

Shiraishi, Shiro: *See*—
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.

Shirose, Haruya: *See*—
Hara, Kenjiro; and Shirose, Haruya, 4,552,104, Cl. 123-192.00R.

Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., to United States of America, Interior. Recovery of titanium from perovskite using sulfuric acid leaching. 4,552,730, Cl. 423-82.000.

Shkolnik, Alexander: *See*—
Borodulin, German; Shkolnik, Alexander; and Baron, Raphael, 4,552,125, Cl. 126-437.000.

Shoji, Takashi; and Ochiai, Kenji, to Showa Denko Kabushiki Kaisha. Electrically conductive pastes. 4,552,691, Cl. 252-514.000.

Showa Denko Kabushiki Kaisha: *See*—
Hirota, Kiwami; Tamano, Hideki; and Sakaguchi, Fumio, 4,552,930, Cl. 525-333.800.
Shoji, Takashi; and Ochiai, Kenji, 4,552,691, Cl. 252-514.000.

Shultz, Clifford G. Destruction of organic hazardous wastes. 4,552,667, Cl. 210-757.000.

Shur-Lok Corporation: *See*—
Grefe, Peter, 4,552,050, Cl. 83-685.000.

Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., to Standard Oil Company, The. Method of forming a nonaqueous stable emulsion of rubber in polymerizable monomer, and the polymerization process and thermoplastic copolymer produced thereby. 4,552,921, Cl. 525-96.000.

Sibley, Henry C., to General Signal Corporation. Modular output driver for vital processor systems. 4,553,200, Cl. 364-200.000.

Sickmuller, Alfred: *See*—
Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, 4,552,771, Cl. 426-548.000.

Siegel, Carole E.: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,552,899, Cl. 514-568.000.

Siemens Aktiengesellschaft: *See*—
Auernhammer, Erich, 4,553,055, Cl. 310-62.000.
Bach, Eric; and Schmidt, Dieter, 4,553,254, Cl. 378-098.000.
Goerne, Jan; and Toussaint, Hans-Norbert, 4,553,249, Cl. 375-25.000.
Kardinal, Hans-Joachim; Lehmann, Herbert; and Dziggel, Klaus-Peter, 4,552,072, Cl. 104-88.000.
Sarnezki, Herbert; and Hubner, Klemens, 4,552,418, Cl. 312-242.000.
Schmid, Rudolf, 4,553,240, Cl. 372-61.000.
Slettenmark, Bruno, 4,553,147, Cl. 346-75.000.
Stebegg, Josef; and Miek, Wolfgang, 4,552,987, Cl. 174-52.00R.
Tilly, Bodo, 4,553,268, Cl. 455-607.000.

Sigg, Hans; and Staedeli, Otto, to Maag Gear Wheel & Machine Company Limited. Clutch arrangement for power transmission, especially a reduction gear drive unit for marine vessels. 4,552,258, Cl. 192-67.00A.

Silkman, Ronald W., to Eastman Kodak Company. Apparatus for reading encoded information on a carrier subject to non-uniform motion. 4,553,027, Cl. 235-474.000.

Sills, David E.: *See*—
Beckman, John A.; and Sills, David E., 4,552,544, Cl. 464-162.000.

Sim, Malcolm F.; and Yates, David B., to Boots Company PLC, The. Method of treating heart disease. 4,552,884, Cl. 514-312.000.

Simnar, Inc.: *See—*
Molnar, Robert, 4,551,885, Cl. 17-59.000.
Singer Company, The: *See—*
Vartoukian, Artin G.; and Moussaian, Gregoire G., 4,552,081, Cl. 112-258.000.
Sinha, Uday K.; and Peacock, Frank A., to Southwire Company. Control in continuous casting to enhance feeding. 4,552,200, Cl. 164-454.000.
Sioux Steam Cleaner Corporation: *See—*
Finger, John F., 4,552,162, Cl. 134-57.00R.
Sippel, Friedrich: *See—*
Schweikl, Ludwig; Weiss, Horst; and Sippel, Friedrich, 4,552,509, Cl. 415-135.000.
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 3-(Pyrimidin-5-yl-oxyphenyl)-1-benzoyl-(thio)-urea compounds useful as pesticides. 4,552,900, Cl. 514-269.000.
Sitte, Hellmuth; and Kleber, Heinrich, to C. Reichert Optische Werke, AG. Apparatus for cooling a biological or medical specimen. 4,551,992, Cl. 62-514.00R.
Skidanenko, Constantine V.; and McGibbon, Gregor D., to GTE Lenkurt Incorporated Communication Systems. Apparatus for isolating the voice frequency path from the floating battery feed during signalling. 4,552,994, Cl. 179-16.0AA.
Skinner, David R.: *See—*
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.
Skinner, William H., Jr.: *See—*
Jenczewski, Theodore J.; and Skinner, William H., Jr., 4,552,635, Cl. 204-182.400.
Skipper, John B., to Dunlop Limited. Reinforced connecting link means. 4,552,035, Cl. 74-581.000.
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., to Schering Aktiengesellschaft. Novel carbacyclinamides, their preparation and use as medicinal agents. 4,552,875, Cl. 514-234.000.
Sky S.p.A.: *See—*
Segalla, Ruggero, 4,552,095, Cl. 119-53.000.
Slade, Paul G., to Westinghouse Electric Corp. Axial magnetic field vacuum-type circuit interrupter. 4,553,002, Cl. 200-144.00B.
Slettenmark, Bruno, to Siemens Aktiengesellschaft. Method and a liquid jet printer for generating at least two separately disposed points on a recording medium. 4,553,147, Cl. 346-75.000.
Sloan, Jack C.: *See—*
Wilensky, Joseph, 4,551,979, Cl. 60-648.000.
SMAC Acieroid: *See—*
Reneault, Patrick; and Ovaert, Francis, 4,551,958, Cl. 52-309.400.
Smart, William A., Jr., to Bradley Corporation. Remotely controllable reset mechanism for a vacuum-actuated system. 4,552,331, Cl. 251-95.000.
Smiley, David L.: *See—*
Krumkalns, Eriks V.; and Smiley, David L., 4,552,886, Cl. 514-342.000.
Krumkalns, Eriks V.; and Smiley, David L., 4,552,960, Cl. 544-336.000.
Smit, Helen E.; and Smit, Julie A. Metal mesh head covering. 4,551,860, Cl. 2-175.000.
Smit, Julie A.: *See—*
Smit, Helen E.; and Smit, Julie A., 4,551,860, Cl. 2-175.000.
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., to Smith R.P.M. Corporation. Anti-wrinkle device. 4,552,295, Cl. 226-195.000.
Smith, Glenn S., to Beebe International, Inc. Suspended load transport apparatus. 4,552,073, Cl. 105-154.000.
Smith-Johannsen, Robert: *See—*
Blasch, Earl; and Smith-Johannsen, Robert, 4,552,800, Cl. 428-212.000.
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., to Motorola, Inc. Queued community repeater mobile. 4,553,263, Cl. 455-54.000.
Smith R.P.M. Corporation: *See—*
Smith, Gary R.; Rutter, Larry J.; and Amer, James E., 4,552,295, Cl. 226-195.000.
Smith, Wayne G. Elastic tubular looped projectile. 4,552,365, Cl. 273-425.000.
Smithberg, Dudley G., to Boeing Company, The. Honeycomb core cutting tool and method of using. 4,551,918, Cl. 30-347.000.
SmithKline Beckman Corporation: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,552,893, Cl. 514-560.000.
Smutek, John M.; Wenig, Robert I.; Webb, Nancy J.; and Waisman, Amnon, to Wang Laboratories, Inc. Image storage and retrieval. 4,553,206, Cl. 364-300.000.
Snow, Bennie E.: *See—*
Martens, Alan; Hobbs, Milton M.; and Snow, Bennie E., 4,552,099, Cl. 122-451.100.
Snyder, Mark A.: *See—*
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,902, Cl. 521-129.000.
Nafziger, John L.; Snyder, Mark A.; and Mobley, Larry W., 4,552,903, Cl. 521-137.000.
Sobajima, Yoshihiro: *See—*
Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, 4,552,689, Cl. 252-511.000.
Sobon, Joseph T.: *See—*
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Societe Anonyme: Construction Electriques R.V.: *See—*
Gaiffier, Albert, 4,552,528, Cl. 431-25.000.
Societe d'Etude du Radant: *See—*
Bolomey, Jean-Charles; and Michel, Yves, 4,552,151, Cl. 128-653.000.
Societe d'Exploitation Cooperative de la Manufacture d'Armes et Cycles de St. Etienne (S.C.O.P.D. Manufrance): *See—*
Chauvet, Pierre, 4,551,936, Cl. 42-42.00R.
Societe Francaise des Produits pour Catalyse Pro-Catalyse: *See—*
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,552,650, Cl. 208-216.0PP.
Societe Industrielle de Sonceboz S.A.: *See—*
Pfister, Jean-Francois, 4,553,056, Cl. 310-80.000.
Societe Nationale Industrielle et Aerospatiale: *See—*
Bokalot, Jean, 4,552,326, Cl. 244-129.500.
Soderberg, Nils-Erik: *See—*
Brannstrom, Roine; and Soderberg, Nils-Erik, 4,552,529, Cl. 432-58.000.
Sol-Chem, Inc.: *See—*
Cutlip, Larry D., 4,551,987, Cl. 62-324.500.
Solomon, Donald F., to Wetco, Inc. Purified water storage system. 4,552,656, Cl. 210-137.000.
Someya, Yoshihiro. Line marking device. 4,551,922, Cl. 33-414.000.
Sommer Company: *See—*
Sommer, Gordon M., 4,552,255, Cl. 192-18.00A.
Sommer, Gordon M., to Sommer Company. Multiple speed drive. 4,552,255, Cl. 192-18.00A.
Sonderegger, Henry R.; and Chatterley, Charles, to ITT Corporation. Butterfly valve, especially for dead-end service. 4,552,332, Cl. 251-148.000.
Sony Corporation: *See—*
Nakamura, Takashi; and Yamaji, Kazunori, 4,553,073, Cl. 315-370.000.
Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, 4,553,169, Cl. 358-221.000.
Soper, Quentin F.: *See—*
Ho, Peter P. K.; and Soper, Quentin F., 4,552,891, Cl. 514-443.000.
Sorensen, Wilfred. Heat actuated system for circulating heat transfer fluids. 4,552,208, Cl. 165-104.220.
Soshin Onkyo Works, Ltd.: *See—*
Kashiwabara, Akihiko, 4,552,242, Cl. 181-144.000.
Southwire Company: *See—*
Sinha, Uday K.; and Peacock, Frank A., 4,552,200, Cl. 164-454.000.
Spahic, Bojana K.; and Green, George F., to Novacor Medical Corporation. Process for producing rubber laminates. 4,552,816, Cl. 428-420.000.
Spector, Marshall L.; and Hong, Sun-Nan, to Air Products and Chemicals, Inc. Process for the removal of ammoniacal nitrogen in the BOD sorption zone of a wastewater treatment plant. 4,552,663, Cl. 210-605.000.
Spectra-Physics, Inc.: *See—*
Miller, Leslie A.; and McCall, Thomas J., 4,552,513, Cl. 417-18.000.
Speller, David J.: *See—*
Ross, Richard J.; and Speller, David J., 4,552,218, Cl. 166-319.000.
Spence, Lewis C., to Ohl, John P. Internal combustion engine. 4,552,106, Cl. 123-198.00A.
Sperry Corporation: *See—*
Carnewal Jose A. C. L; and Van Overschelde, Daniel M., 4,552,547, Cl. 474-101.000.
Dettmer, Jay R., 4,553,214, Cl. 364-521.000.
Lustig, Claude D., 4,553,143, Cl. 340-719.000.
Spicar, Erich: *See—*
Persson, Bo G.; and Spicar, Erich, 4,552,990, Cl. 174-117.0FF.
Spiral Drilling Systems, Inc.: *See—*
Frear, Lawrence, 4,552,232, Cl. 175-337.000.
Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Substituted 4-hydroxyphenylthio benzoate stabilizers. 4,552,926, Cl. 524-219.000.
Spong, Richard V.: *See—*
Bonifanti, George; Jackson, Mark F.; Letsch, Karl H.; Longenecker, Bruce C.; Loomis, Phillip E.; Nguyen, Hung T.; Schuppert, Leo V., Jr.; Spong, Richard V.; and Paukovits, Edward J., Jr., 4,551,901, Cl. 29-564.600.
Sprague Devices, Inc.: *See—*
McIntyre, Allan E., 4,552,480, Cl. 403-76.000.
Square D Company: *See—*
Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., 4,552,018, Cl. 73-431.000.
Schubring, Allin W., 4,553,117, Cl. 335-61.000.
Seaquist, James J.; and Harmon, Elred R., 4,552,424, Cl. 339-32.00R.
Staar S. A.: *See—*
d'Alayer de Costemore d'Arc, Stephane A. M., 4,553,231, Cl. 369-263.000.
Staedeli, Otto: *See—*
Sigg, Hans; and Staedeli, Otto, 4,552,258, Cl. 192-67.00A.
Staeubli Ltd.: *See—*
Kleiner, Walter, 4,552,184, Cl. 139-66.00R.
Stafford, Charles W.: *See—*
Evans, Robert F.; and Stafford, Charles W., 4,552,228, Cl. 175-228.000.
Stahl, Kurt. Carrier body for a disc brake pad. 4,552,252, Cl. 188-73.100.

Stal-Laval Turbin AB: *See—*
Brannstrom, Roine; and Soderberg, Nils-Erik, 4,552,529, Cl. 432-58.000.
Stamicarbon B.V.: *See—*
van den Brink, Franciscus; and Alfenaar, Marinus, 4,552,636, Cl. 204-182.400.
Stammberger, Willi: *See—*
Fulberth, Werner; Sickmuller, Alfred; and Stammberger, Willi, 4,552,771, Cl. 426-548.000.
Stanadyne, Inc.: *See—*
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Standard-Knapp, Inc.: *See—*
Johnson, Lloyd D., 4,551,964, Cl. 53-374.000.
Raudat, John L.; and Thompson, Timothy H., 4,552,261, Cl. 198-425.000.
Standard Oil Company, The: *See—*
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Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,552,921, Cl. 525-96.000.
Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., 4,552,705, Cl. 260-465.50R.
Standard Oil Company (Indiana): *See—*
Forgac, John M.; and Hoekstra, George R., 4,552,214, Cl. 166-259.000.
Standard Telephones and Cables, plc: *See—*
Titchmarsh, James G.; and Hale, Peter G., 4,552,433, Cl. 350-96.230.
Stanley, Deryl B., to Cole-Parmer Instrument Company. Peristaltic pump. 4,552,516, Cl. 417-477.000.
Stanley Works, The: *See—*
Wohlwend, Maurice, 4,552,227, Cl. 173-15.000.
Stapp, Paul R., to Phillips Petroleum Company. Dearsenating of shale oil with metal chlorates. 4,552,646, Cl. 208-90.000.
Stauber, Philipp: *See—*
Burckhardt, Christof W.; Stauber, Philipp; and Piller, Gerard, 4,552,028, Cl. 73-862.040.
Stauffer Chemical Company: *See—*
Band, Elliot I.; and Breen, Michael J., 4,552,859, Cl. 502-127.000.
Bunker, Nathan S., 4,552,896, Cl. 514-550.000.
Estes, William E., 4,552,737, Cl. 423-307.000.
Everett, Nicholas P., 4,552,844, Cl. 435-240.000.
Felix, Raymond A., 4,552,968, Cl. 548-112.000.
Haag, William G.; and Chavdarian, Charles G., 4,552,870, Cl. 514-89.000.
Staugaitis, Charles L.: *See—*
Chu, Huai-Pu; and Staugaitis, Charles L., 4,552,784, Cl. 427-192.000.
Stebegg, Josef; and Miek, Wolfgang, to Siemens Aktiengesellschaft. Initiator for a contactless switch. 4,552,987, Cl. 174-52.00R.
Stedham, Yolanda. Pet repellent device. 4,552,307, Cl. 239-57.000.
Stefani, Fabrizio: *See—*
Alzati, Angelo; Diazzi, Claudio; and Stefani, Fabrizio, 4,553,046, Cl. 307-289.000.
Steffel, Steve, to Ferguson, Frank Warren. Mechanical assembly for audio-visual teaching machines. 4,552,535, Cl. 434-315.000.
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Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., 4,552,856, Cl. 502-74.000.
Stehr, Franz, to Eumuco Aktiengesellschaft fur Maschinenbau. Die ejector assembly for multi-stage forming machines. 4,552,525, Cl. 425-422.000.
Steinbrucker, Gerhard: *See—*
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.
Stemmler, Herbert, to BBC Brown, Boveri & Company, Limited. Converter with fast-acting overvoltage protection. 4,553,197, Cl. 363-37.000.
Stendel, Wilhelm: *See—*
Sirrenberg, Wilhelm; Maurer, Fritz; Klauke, Erich; Becker, Benedikt; and Stendel, Wilhelm, 4,552,900, Cl. 514-269.000.
Sterling, Robert E., to Medical Research Associates, Ltd. #2. Hydrocarbon block copolymer with dispersed polysiloxane. 4,552,914, Cl. 524-269.000.
Stevens, George L., to Morton Thiokol, Inc. Self-contained crash bag and initiator. 4,552,380, Cl. 280-728.000.
Stevens, Gerald S., Jr.: *See—*
Nickels, Richard C., Jr.; and Stevens, Gerald S., Jr., 4,552,352, Cl. 271-10.000.
Stevens, Glenn G.; and Kennedy, Roger C., to Boeing Company, The. Liquid storage gauging method and apparatus. 4,553,216, Cl. 364-558.000.
Stevenson, Richard M., to Landney, Michael, Jr. Metal plating of polyamide thermoplastics. 4,552,626, Cl. 204-20.000.
Stewart, Vernon G.; and Adamek, Frank C., to Gray Tool Company. Stem sealing for high pressure valve. 4,552,369, Cl. 277-226.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Mahotra, Satish K., 4,551,920, Cl. 33-257.000.
Stierlen-Maquet AG: *See—*
Schnelle, Eberhard; Jung, Hans-Ulrich; and Hetzel, Werner, 4,552,346, Cl. 269-322.000.
Stifter, Francis J. Uninterruptible power supply. 4,553,039, Cl. 307-66.000.
Stiggelbout, William A., to Hewlett-Packard Company. Method of making flexible circuit connections. 4,551,914, Cl. 29-837.000.
Stockel, Dieter: *See—*
Geibig, Karl F.; Schwab, Adolf; and Stockel, Dieter, 4,553,063, Cl. 313-325.000.
Stockinger, Friedrich: *See—*
Haug, Theobald; and Stockinger, Friedrich, 4,552,935, Cl. 525-488.000.
Stoka, Roberto: *See—*
Burgdorf, Jochen; and Stoka, Roberto, 4,552,253, Cl. 188-73.380.
Stokes, Keith J., to James Chemical Engineering Inc. Process for treatment of urea plant process condensate. 4,552,979, Cl. 564-69.000.
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., to General Electric Company. Enhancing the selectivity of tungsten deposition on conductor and semiconductor surfaces. 4,552,783, Cl. 427-91.000.
Stolzenberg, Konrad; Koch, Karl H.; and Marrett, Rolf, to Ruetgerswerke Aktiengesellschaft. Method for the mass separation of a liquid mixture through fractional crystallization. 4,552,575, Cl. 62-544.000.
Stone & Webster Engineering Corporation: *See—*
Gartside, Robert J.; Johnson, Axel R.; and Ross, Joseph L., 4,552,645, Cl. 208-80.000.
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,552,644, Cl. 208-78.000.
Storage Technology Partners: *See—*
Zasio, John J.; and Cooke, Larry, 4,553,236, Cl. 371-15.000.
Strauss, Paul, to Zenith Electronics Corporation. Apparatus for mounting a touch control panel assembly to a CRT. 4,553,142, Cl. 340-712.000.
Strauss, Richard H. Earplugs. 4,552,137, Cl. 128-152.000.
Street, Graham S. B. Method and apparatus for use in producing autostereoscopic images. 4,552,442, Cl. 354-112.000.
Strickler, Robert E.: *See—*
Bettencourt, George S.; and Strickler, Robert E., 4,552,426, Cl. 339-75.00M.
Stroup, Steven L. Apparatus for cutting tubing into predetermined lengths. 4,552,047, Cl. 82-102.000.
Struger, Odo J.; and Sammons, Barry E., to Allen-Bradley Company. Multiplexed data handler for programmable controller. 4,553,224, Cl. 364-900.000.
Studiecentrum voor Kernenergie, S.C.K.: *See—*
Binard, Luc Andre M. G., 4,552,134, Cl. 128-1.500.
Sturm, Warren A.: *See—*
Klima, Frank J., 4,552,233, Cl. 175-371.000.
Suchomel, Robert R.: *See—*
Rigby, Eugene B.; Scheidecker, Ralph W.; and Suchomel, Robert R., 4,552,710, Cl. 264-64.000.
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Light measurement compensation device for camera. 4,552,446, Cl. 354-429.000.
Sudo, Fumio: *See—*
Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, 4,552,334, Cl. 251-240.000.
Sugawara, Shigeru, to Tenyo Company, Ltd. Penetration-through-wall magic set. 4,552,355, Cl. 272-8.00R.
Sugawara, Shinichi: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.
Sugawara, Yoshitaka, to Hitachi, Ltd. High voltage resistance element. 4,553,125, Cl. 338-283.000.
Sugimoto, Shigeo: *See—*
Miyoshi, Nobutaka; Sugimoto, Shigeo; and Aizawa, Michihiko, 4,551,991, Cl. 62-476.000.
Sugimura, Yukio: *See—*
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.
Sugishita, Susumu: *See—*
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,551,896, Cl. 29-156.40R.
Suisaku Kabushiki Kaisha: *See—*
Ogawa, Yonekichi, 4,552,657, Cl. 210-169.000.
Sulzer Brothers Limited: *See—*
Grotloh, Karl H., 4,552,330, Cl. 251-30.010.
Weber, Max, 4,552,211, Cl. 165-160.000.
Sulzer-Escher Wyss Ltd.: *See—*
Schlatter, Beat; and Schnyder, Eugen, 4,552,008, Cl. 72-243.000.
Sumida, Atsushi: *See—*
Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, 4,552,743, Cl. 423-447.700.
Sumigawa, Yukio, to Sanshin Kogyo Kabushiki Kaisha. Propeller for marine propulsion device. 4,552,511, Cl. 416-242.000.
Sumino, Shin. Rear dump truck with sieving device. 4,552,653, Cl. 209-421.000.
Sumitomo Chemical Company, Limited: *See—*
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, 4,552,972, Cl. 556-35.000.
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, 4,552,703, Cl. 260-466.000.
Sumitomo Corporation: *See—*
Hirano, Yutaka; and Kawai, Hiroki, 4,552,601, Cl. 156-79.000.
Sumitomo Electric Industries, Ltd.: *See—*
Hibino, Yutaka, 4,552,819, Cl. 428-516.000.
Masuda, Shigeo; and Katsuda, Morihiko, 4,552,599, Cl. 156-50.000.
Murakami, Kazuhito; and Takahashi, Kenichi, 4,552,434, Cl. 350-96.300.

Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, 4,552,788, Cl. 427-374.500.
Sun Coast Plastics, Inc.: *See*—
Dutt, Herbert V.; and Santostasi, Paul A., 4,552,328, Cl. 249-67.000.
Sundermann, Rudolf: *See*—
Mardin, Mithat; Sundermann, Rudolf; Hoffmeister, Friedrich; Busse, Wolf-Dieter; Horstmann, Harald; and Raddatz, Siegfried, 4,552,874, Cl. 514-222.000.
Sung, Sam C. Y., to Chiang, Hou Sheng. Drawing triangle. 4,551,923, Cl. 33-476.000.
Sunouchi, Akio: *See*—
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Analgesic Associates. Cough/cold mixtures comprising non-steroidal anti-inflammatory drugs. 4,552,899, Cl. 514-568.000.
Susukamo, Gohfu: *See*—
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, 4,552,972, Cl. 556-35.000.
Sutton, Leroy A., to Zenith Electronics Corporation. Video system with automatic power up. 4,553,166, Cl. 358-190.000.
Suyama, Satoshi, to Tsurumi-Seiko Co., Ltd., The. Sensor for currentmeter. 4,552,016, Cl. 73-170.00A.
Suzaki, Masayuki; and Kanno, Tetuo, to Ricoh Co., Ltd. Printer carriage and hammer assembly. 4,552,475, Cl. 400-144.200.
Suzansky, Vasily G.: *See*—
Lyakhevich, Genrikh D.; Khimanych, Anatoly P.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,552,621, Cl. 202-84.000.
Suzuki, Akira: *See*—
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, 4,552,671, Cl. 252-8.900.
Suzuki, Kisaku. Food shaping apparatus. 4,552,523, Cl. 425-225.000.
Suzuki, Koichi: *See*—
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.
Suzuki, Koji: *See*—
Aoki, Harumi; Morisawa, Tahei; Suzuki, Koji; and Ogawa, Kimiaki, 4,553,170, Cl. 358-225.000.
Suzuki, Kunihiko, to Nissan Motor Company, Ltd. Four-wheel drive system with center differential lock control responsive to rpm difference. 4,552,241, Cl. 180-249.000.
Suzuki, Mieko: *See*—
Kumakura, Minoru; Kaetsu, Isao; Suzuki, Mieko; and Adachi, Masakazu, 4,552,633, Cl. 204-159.210.
Suzuki, Nobuyuki: *See*—
Suda, Yasuo; Alyfuku, Kiyoshi; Sunouchi, Akio; and Suzuki, Nobuyuki, 4,552,446, Cl. 354-429.000.
Suzuki, Satoru. Boosting apparatus for turbo-jet engine. 4,551,971, Cl. 60-39.530.
Svecia Silkscreen Maskiner AB: *See*—
Ericsson, Sylve J. D., 4,551,925, Cl. 34-4.000.
Svenska Lantmannens Riksforbund, Forening u.p.a: *See*—
Baeling, Peter; and Ehnstrom, Lars (said Lars Ehnstrom assors. to), 4,552,775, Cl. 426-624.000.
Svensson, Lars T. E., to Telefonaktiebolaget LM Ericsson. Apparatus for connecting digital terminals to a digital exchange. 4,553,235, Cl. 370-94.000.
Svoboda, Josef, to TMC Corporation. Safety ski binding. 4,552,378, Cl. 280-632.000.
Swanson, William E., to GTI Corporation. Matrix multiplier with normalized output. 4,553,220, Cl. 364-715.000.
Sweetland, Roger D.: *See*—
Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., 4,552,662, Cl. 210-232.000.
Swengel, Robert C., Jr., to AMP Incorporated. Shunted electrical connectors. 4,552,423, Cl. 339-19.000.
Swersey, Burt L.; and Fried, Peter I., to COBE ASDT, Inc. Scale of flat construction. 4,551,882, Cl. 16-226.000.
Swierczek, Zbignew: *See*—
Mueller, Bruce M.; and Swierczek, Zbignew, 4,552,279, Cl. 215-318.000.
Swift, Joseph A.: *See*—
Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., 4,553,191, Cl. 361-212.000.
Swiss Aluminium Ltd.: *See*—
Vire , Sylvestre; and Gauckler, Ludwig, 4,552,637, Cl. 204-243.00R.
Syntex (U.S.A.) Inc.: *See*—
Broadhead, James H., 4,551,973, Cl. 60-477.000.
Gould, Dennis R.; and Zuk, Robert F., 4,552,839, Cl. 435-7.000.
Li, Tsung-Tee; and Marx, Michael, 4,552,898, Cl. 514-561.000.
Szecsei, Joseph. Gear drive. 4,552,030, Cl. 74-462.000.
Szell, Andras: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
Szoke, Balazs: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.
Szostak, Tadeusz, to Thomas & Betts Corporation. Method and apparatus for cleaving optical fibers. 4,552,290, Cl. 225-2.000.
Szuminski, Gary F.; and Jones, Thomas J., to Rolls-Royce Inc.; and Rolls-Royce Limited. Variable geometry nozzles for turbomachines. 4,552,309, Cl. 239-265.190.
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for elimination of biofouling. 4,552,659, Cl. 210-177.000.
Tabata, Youichiro: *See*—
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.
Tabuchi, Yoshinobu: *See*—
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.
Tachibana, Kunitaka: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto, Akira, to Matsushita Electric Industrial Company, Ltd. Ultrasonic diagnostic apparatus using Doppler effect. 4,552,152, Cl. 128-663.000.
Tack, Paul G.: *See*—
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.
Tada, Haruo: *See*—
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.
Tadokoro, Eiichi: *See*—
Ryoke, Katsumi; Abe, Yasuhiro; Iida, Shinobu; and Tadokoro, Eiichi, 4,552,798, Cl. 428-194.000.
Ryoke, Katsumi; Iida, Shinobu; Fujiyama, Masaaki; and Tadokoro, Eiichi, 4,552,799, Cl. 428-194.000.
Taguchi, Toshio: *See*—
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, 4,552,092, Cl. 118-718.000.
Tahara, Yoshitaka, to Mazda Motor Corporation. Engine knocking detecting means. 4,552,111, Cl. 123-425.000.
Taino, Kazuo: *See*—
Nakata, Takeshi; Horinouchi, Atsushi; and Taino, Kazuo, 4,553,011, Cl. 219-10.55B.
Tajima, Masaru: *See*—
Muramatsu, Kazuhiro; Watari, Yuuzi; Tajima, Masaru; and Nakaju, Isamu, 4,552,754, Cl. 424-70.000.
Takada, Juichiro. Seatbelt clamp. 4,552,407, Cl. 297-476.000.
Takahashi, Atsushi: *See*—
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.
Takahashi, Ikuo: *See*—
Sano, Yukinori; Hoshi, Yoshikazu; and Takahashi, Ikuo, 4,552,114, Cl. 123-481.000.
Takahashi, Kazukiyo, to NEC Corporation. High speed comparator circuit with input-offset compensation function. 4,553,052, Cl. 307-494.000.
Takahashi, Kenichi: *See*—
Murakami, Kazuhito; and Takahashi, Kenichi, 4,552,434, Cl. 350-96.300.
Takahashi, Kimio: *See*—
Hirose, Etsuro; Takahashi, Kimio; Mori, Toshiro; and Kaito, Haruyuki, 4,551,996, Cl. 68-20.000.
Takahashi, Kouichi: *See*—
Nagao, Akihito; Takahashi, Kouichi; Masuda, Shunji; Fujimoto, Misao; and Nishikawa, Toshio, 4,552,112, Cl. 123-432.000.
Takaku, Hiroshi; and Noda, Takeshi, to Sankyo Chemical Company, Limited. Process for the synthesis of 4',5'-unsaturated nucleosides. 4,552,955, Cl. 536-24.000.
Takano, Satoshi: *See*—
Sato, Kenichi; Takano, Satoshi; and Miyazaki, Kenji, 4,552,788, Cl. 427-374.500.
Takano, Toshio; and Kobayashi, Toshio, to Fuji Jukogyo Kabushiki Kaisha. Automatic transmission for automotive vehicles. 4,552,036, Cl. 74-705.000.
Takaoka, Akio: *See*—
Ishikawa, Nobuo; and Takaoka, Akio, 4,552,694, Cl. 260-239.0BD.
Takata, Naoto: *See*—
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, 4,552,239, Cl. 180-140.000.
Takatani, Teruhiko: *See*—
Kanazawa, Hirotaka; Takatani, Teruhiko; and Takata, Naoto, 4,552,239, Cl. 180-140.000.
Takeda Chemical Industries, Ltd.: *See*—
Goto, Jugo; and Kubota, Tsutomu, 4,552,920, Cl. 525-58.000.
Takeda, Hisanobu: *See*—
Kawai, Shinji; Yamaguchi, Yuji; Suzuki, Koichi; and Takeda, Hisanobu, 4,551,868, Cl. 4-443.000.
Takeda Riken Co., Ltd.: *See*—
Nishiura, Junji, 4,553,100, Cl. 328-63.000.
Takei, Haruo: *See*—
Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, 4,552,828, Cl. 430-217.000.
Takei, Kenji; and Akabane, Yukihiro, to Nippon Seiko Kabushiki Kaisha. Rolling bearings for strut-type suspensions. 4,552,467, Cl. 384-615.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha Ltd. Herbicidal compositions. 4,552,583, Cl. 71-86.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal composition and herbicidal processes. 4,552,584, Cl. 71-86.000.

Takemoto Yushi Kabushiki Kaisha: *See*—
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, 4,552,671, Cl. 252-8.900.

Takeshima, Sadao; and Ohe, Takeshi, to Jidosha Kiki Co., Ltd. Power steering apparatus. 4,552,240, Cl. 180-142.000.

Takeuchi, Chifumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with key touch detector and operator member. 4,552,051, Cl. 84-1.240.

Takeyuki, Mizuno, to NGK Insulators, Ltd. Radial type ceramic turbine rotor and method of producing the same. 4,552,510, Cl. 416-241.00B.

Takezawa, Kuninori: *See*—
Nakada, Akiyoshi; Inoue, Toshitugu; Tada, Haruo; Shinki, Kiyoshi; Takezawa, Kuninori; and Doi, Makoto, 4,552,504, Cl. 414-735.000.

Tamada, Minoru; Kumokawa, Takashi; and Shimamoto, Ichiji, to Murata Manufacturing Co., Ltd. Miniature inductor. 4,553,123, Cl. 336-83.000.

Tamano, Hideki: *See*—
Hirota, Kiwami; Tamano, Hideki; and Sakaguchi, Fumio, 4,552,930, Cl. 525-333.800.

Tanabashi, Toshifumi: *See*—
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, 4,552,605, Cl. 156-273.300.

Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,552,836, Cl. 430-549.000.

Tanabe, Osami: *See*—
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.

Tanaka, Kazunori; and Yoshikawa, Mitsuru, to Duplo Seizo Kabushiki Kaisha. Double-feed prevention device in paper feeding apparatus. 4,552,353, Cl. 271-124.000.

Tanaka, Teruo: *See*—
Miyadera, Tetsuo; Sugimura, Yukio; Hashimoto, Toshihiko; Tanaka, Teruo; Iino, Kimio; Shibata, Tomoyuki; and Sugawara, Shinichi, 4,552,873, Cl. 514-210.000.

Tanaka, Yoichi: *See*—
Masuda, Toshiro; and Tanaka, Yoichi, 4,553,215, Cl. 364-525.000.

Tanaka, Yoko: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

Tanaka, Yoshiaki: *See*—
Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.

Tang, Robert H.: *See*—
Black, Donald J.; and Tang, Robert H., 4,552,682, Cl. 252-186.260.

Tanigaki, Shuzo; and Sakaki, Masayuki, to Kabushiki Kaisha Meidensha. Vacuum monitor for vacuum interrupter. 4,553,139, Cl. 340-626.000.

Tanioku, Shozo: *See*—
Mikita, Muneharu; Tanioku, Shozo; and Touda, Takayasu, 4,552,938, Cl. 526-240.000.

Tappe, Horst: *See*—
Buhler, Ulrich; Kuhlein, Klaus; Tappe, Horst; Kallay, Maria; Kosubek, Uwe; and Lowenfeld, Rudolf, 4,552,953, Cl. 534-886.000.

Tarusawa, Tetsunobu; Kawada, Shoiti; and Senzai, Ryosuke, to CKD Corporation. Miniature solenoid valve. 4,552,179, Cl. 137-625.650.

Tatin, Gerard: *See*—
Dubreux, Bernard; Emeraud, Jackie; Tatin, Gerard; and Schirmann, Jean-Pierre, 4,552,563, Cl. 8-107.000.

Tatsuki, Tokuji, to Kabushiki Kaisha Dunlop Home Products. Head cooling implement. 4,552,149, Cl. 128-402.000.

Tauster, Samuel J.; Vaughan, David E. W.; and Steger, John J., to Exxon Research and Engineering Co. Zeolite catalyst and preparation thereof. 4,552,856, Cl. 502-74.000.

Taylor, Edward C.: *See*—
Greene, James M.; Lavagnino, Edward R.; Pike, Andrew J.; and Taylor, Edward C., 4,552,967, Cl. 546-307.000.

Taylor, Henry F.: *See*—
Giallorenzi, Thomas G.; Sheem, Sang K.; and Taylor, Henry F., 4,552,457, Cl. 356-345.000.

Taylor, Thomas F.: *See*—
Cuscino, Richard T.; Lee, Lester H.; Prohl, Melvin A.; Skinner, David R.; and Taylor, Thomas F., 4,552,292, Cl. 228-183.000.

Taylor, Thomas H.: *See*—
Hartman, William L.; O'Brien, David A.; and Taylor, Thomas H., 4,552,680, Cl. 252-102.000.

Taylor, William R., to Hal Johnston Pty. Limited. Decontamination apparatus. 4,552,728, Cl. 422-300.000.

Teagno, Vladimiro; and Chiusa, Alessandro, to AMP Incorporated. Workpiece feeding apparatus. 4,552,260, Cl. 198-345.000.

Teijin Limited: *See*—
Norota, Susumu; Segawa, Yasuhiko; and Emi, Shingo, 4,552,810, Cl. 428-398.000.
Sasaki, Yasusuke, 4,552,313, Cl. 242-18.00A.

Tektronix, Inc.: *See*—
Bristol, L. Rodney, 4,553,091, Cl. 324-74.000.

Teledyne Industries, Inc.: *See*—
Rogo, Casimir; and Lenz, Herman N., 4,552,308, Cl. 239-457.000.

Telefonaktiebolaget LM Ericsson: *See*—
Johansson, Karl H.; and Severinsson, Anders S., 4,552,455, Cl. 356-5.000.
Svensson, Lars T. E., 4,553,235, Cl. 370-94.000.

Teng, Edward F.: *See*—
Lin, Yeong S.; Ballard, Nathan T.; Lee, John T.; and Teng, Edward F., 4,552,820, Cl. 428-611.000.

Tenud, Leander; and Jolidon, Synese, to Lonza Ltd. Process for the production of 4-(trialkylammonium)-acetoacetarylides. 4,552,983, Cl. 564-200.000.

Tenyo Company, Ltd.: *See*—
Sugawara, Shigeru, 4,552,355, Cl. 272-8.00R.

Teplan, Istvan: *See*—
Antoni, Ferenc; Erchegyi, Judit; Horvath, Aniko ; Keri, Gyorgi; Mezo , Imre; Nikolics, Karoly; Seprodi, Janos; Szell, Andras; Szoke, Balazs; and Teplan, Istvan, 4,552,864, Cl. 514-15.000.

Terada, Hirokiyo: *See*—
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.

Teramachi, Hiroshi. Method of making a linear slide ball bearing. 4,551,895, Cl. 29-148.40R.

Teraoka Seiko Co., Ltd.: *See*—
Kawahara, Kazuto, 4,551,962, Cl. 53-131.000.

Testa, Raymond T.: *See*—
Martin, John H. E. J.; Kirby, Jane P.; Borders, Donald B.; Fantini, Amedeo A.; and Testa, Raymond T., 4,552,867, Cl. 514-18.000.

Texaco Inc.: *See*—
Burns, Simon P.; Walton, John M.; and McEntire, Edward E., 4,552,958, Cl. 544-177.000.
Larkin, John M., 4,552,862, Cl. 502-306.000.
Lin, Jiang-Jen; and Knifton, John F., 4,552,976, Cl. 560-204.000.
McEntire, Edward E., 4,552,957, Cl. 544-177.000.
Morris-Sherwood, Betty J.; and Brink, Edward C., Jr., 4,552,686, Cl. 252-392.000.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,552,933, Cl. 525-454.000.

Texas Instruments Incorporated: *See*—
Prater, Cordell E., 4,553,051, Cl. 307-475.000.

Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., to Exxon Research and Engineering Co. Preparation of sulfonated copolymers by suspension copolymerization. 4,552,939, Cl. 526-287.000.

Thatcher, David R. P.: *See*—
Chuang, Karl T.; and Thatcher, David R. P., 4,552,744, Cl. 423-522.000.

Theeuwes, Felix, to ALZA Corporation. System for intravenous delivery of a beneficial agent. 4,552,555, Cl. 604-56.000.

Theeuwes, Felix: *See*—
Urquhart, John; and Theeuwes, Felix, 4,552,556, Cl. 604-80.000.

Thermo Electron Corporation: *See*—
Birkner, Joseph R.; Nunes, Maurice; and Hurley, James R., 4,552,123, Cl. 126-369.000.

Therolf, Dieter: *See*—
Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,552,524, Cl. 425-406.000.

Thevenin, Jean-Claude: *See*—
Allemand, Louis-Rene ; Calvet, Jean; Cavan, Jean-Claude; and Thevenin, Jean-Claude, 4,552,431, Cl. 350-96.340.

Thibaut, Bernard, to Thibaut S.A. Device for mounting and removal of polishing wheels in machines for polishing stones or like materials. 4,551,902, Cl. 29-568.000.

Thibaut S.A.: *See*—
Thibaut, Bernard, 4,551,902, Cl. 29-568.000.

Thiem, Karl W.; and Vanderpool, Daniel P., to Mobay Chemical Corporation. Process for the production of 5-nitro-acet-2,4-xylidine. 4,552,981, Cl. 564-146.000.

Thomas, A. Lynn, to Thomas Tree Stand Co., Inc. Portable hunter tree stand. 4,552,246, Cl. 182-116.000.

Thomas & Betts Corporation: *See*—
Szostak, Tadeusz, 4,552,290, Cl. 225-2.000.

Thomas, Rudy V.: *See*—
Narayan, Surendra D.; and Thomas, Rudy V., 4,551,889, Cl. 24-196.000.

Thomas Tree Stand Co., Inc.: *See*—
Thomas, A. Lynn, 4,552,246, Cl. 182-116.000.

Thompson, Brian K.: *See*—
Belanger, James A.; Calvin, Douglas J.; and Thompson, Brian K., 4,552,297, Cl. 227-120.000.

Thompson, Charles E.; Mooney, John J.; Keith, Carl D.; and Mannion, William A., to Engelhard Corporation. Polyfunctional catalysts and method of use. 4,552,733, Cl. 423-213.500.

Thompson, Timothy H.: *See*—
Raudat, John L.; and Thompson, Timothy H., 4,552,261, Cl. 198-425.000.

Thomson-Brandt: *See*—
Moraillon, Jean-Yves, 4,553,159, Cl. 358-44.000.

Thomson CSF: *See*—
Blanchard, Pierre, 4,553,113, Cl. 333-122.000.
Bouhelier, Francis; and Vialatte, Claude, 4,553,223, Cl. 364-900.000.
Chautemps, Jacques; and Descure, Pierrick, 4,553,168, Cl. 358-213.000.
Douziech, Patrick; and Imbert, Michel, 4,553,156, Cl. 358-24.000.
Gerard, Jean L.; and Bricot, Claude, 4,553,228, Cl. 369-46.000.
Labb, Georges, 4,553,164, Cl. 358-163.000.

Thornton, F. James: *See*—
Pay, Clifford R.; and Thornton, F. James, 4,552,231, Cl. 175-330.000.

Thuries, Edmond, to Alsthom-Atlantique. Puffer-type gas-blast circuit-breaker. 4,553,004, Cl. 200-148.00A.

Tilly, Bodo, to Siemens Aktiengesellschaft. Circuit arrangement with a laser diode for transmission of communication signals through a light waveguide. 4,553,268, Cl. 455-607.000.

Tiomkin, Michael V.: *See*—
Bar-Nefy, Simcha; and Tiomkin, Michael V., 4,552,053, Cl. 89-1.130.

Tip-N-Wrap, Inc.: *See*—
Griggs, Gloria D., 4,552,160, Cl. 132-73.000.

Titchmarsh, James G.; and Hale, Peter G., to Standard Telephones and Cables, plc. Optical fibre cable manufacture. 4,552,433, Cl. 350-96.230.

TMC Corporation: *See*—
Svoboda, Josef, 4,552,378, Cl. 280-632.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.

Tobler, Paul: *See*—
Punzar, Marianne; Marti, Franz; Mercier, Robert; Tobler, Paul; and Buttiker, Rudolf, 4,552,959, Cl. 544-190.000.

Tohoku Mikuni Kogyo Kabushiki Kaisha: *See*—
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.

Tokiwai, Moriyasu; Moriguchi, Sakumi; and Shinkawa, Takao, to Jeol Ltd.; and Central Research Institute of Electric Power Industry. Method for automatic analysis of electron beam diffraction pattern. 4,553,030, Cl. 250-307.000.

Tokuyama, Keiichi; Naito, Shotaro; and Watanabe, Shizuhisa, to Hitachi, Ltd. Power source system for vehicular electronic device. 4,553,196, Cl. 363-21.000.

Tokyo Electric Co., Ltd.: *See*—
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.

Tokyo Juki Industrial Co., Ltd.: *See*—
Horeschi, Giancarlo; and Barozzi, Gian P., 4,552,474, Cl. 400-310.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Endoh, Naoki, 4,553,131, Cl. 340-347.0DD.
Harada, Koosuke; and Murata, Katsuaki, 4,553,199, Cl. 363-75.000.
Katahira, Shunsuke, 4,553,150, Cl. 346-154.000.
Kato, Masaaki, 4,553,130, Cl. 340-347.0DD.
Kawakami, Hiroshi; and Torii, Shigeyoshi, 4,553,186, Cl. 360-130.210.
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.
Ogawa, Atsushi, 4,553,107, Cl. 330-288.000.
Ogishima, Kiichiro, 4,553,184, Cl. 360-103.000.
Sasaki, Gen; and Kameyama, Shuichi, 4,551,911, Cl. 29-576.00W.
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, 4,552,417, Cl. 308-10.000.
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.

Tomati, Umberto: *See*—
Grappelli, Adriana; Tomati, Umberto; and Palma, Grazio, 4,552,726, Cl. 422-184.000.

Tomimori, Kiyoshi: *See*—
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, 4,552,417, Cl. 308-10.000.

Tomita, Masahiro: *See*—
Abe, Seiko; Sakakibara, Yasuyuki; Tomita, Masahiro; and Shinoda, Kazuo, 4,553,059, Cl. 310-328.000.

Tomiyama, Yoshiro; Yamanashi, Masaaki; Morishita, Hitoshi; Sudo, Fumio; Fujii, Shuzo; and Miwa, Hideo, to Kawasaki Steel Corporation; and Denka Consultant & Engineering Company Limited. Flow change-over valve for the blowing of fluids into molten metal vessel. 4,552,334, Cl. 251-240.000.

Tomosada, Masahiro; Maeshima, Katsuyoshi; Inuzuka, Tsuneki; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Variable magnification apparatus with lens position control. 4,552,450, Cl. 355-14.00R.

Tone, Junsuke: *See*—
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,552,843, Cl. 435-76.000.

Toppan Printing Co., Ltd.: *See*—
Igarashi, Makoto; Kumagami, Naoki; and Okano, Kiichiro, 4,553,079, Cl. 318-626.000.
Masuda, Toshiro; and Tanaka, Yoichi, 4,553,215, Cl. 364-525.000.

Toray Industries, Inc.: *See*—
Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, 4,552,743, Cl. 423-447.700.

Toray Silicone Company, Ltd.: *See*—
Mikami, Ryuzo; and Saruyama, Toshio, 4,552,919, Cl. 524-860.000.

Torigata, Hajime; Sumida, Atsushi; and Matsubara, Nobuyuki, to Toray Industries, Inc. Process for producing carbon fiber. 4,552,743, Cl. 423-447.700.

Torii, Shigeyoshi: *See*—
Kawakami, Hiroshi; and Torii, Shigeyoshi, 4,553,186, Cl. 360-130.210.

Torisawa, Yoshihiro: *See*—
Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,469, Cl. 400-119.000.

Torisawa, Yoshiro: *See*—
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased, 4,552,472, Cl. 400-124.000.

Torri, G., to Dragerwerk Aktiengesellschaft. Anesthetic respiratory system. 4,552,141, Cl. 128-205.120.

Toshiba Silicone Co., Ltd.: *See*—
Sakamoto, Ryuji; and Yamazaki, Taro, 4,552,688, Cl. 252-511.000.

Touda, Takayasu: *See*—
Mikita, Muncharu; Tanioku, Shozo; and Touda, Takayasu, 4,552,938, Cl. 526-240.000.

Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, to Societe Francaise des Produits pour Catalyse Pro-Catalyse. Process for hydrotreating metal containing oil fractions using a supported catalyst of increased resistance to poisons. 4,552,650, Cl. 208-216.0PP.

Toussaint, Hans-Norbert: *See*—
Goerne, Jan; and Toussaint, Hans-Norbert, 4,553,249, Cl. 375-25.000.

Town, Michael H.: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Mannesmann, Gerda; Nieuweboer, Bob; and Town, Michael H., 4,552,875, Cl. 514-234.000.

Toya, Ichizo; Mihara, Yuji; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Direct positive silver halide photographic emulsion. 4,552,828, Cl. 430-217.000.

Toyo Seikan Kaisha Limited: *See*—
Itoh, Senji; Tanabashi, Toshifumi; and Ishibashi, Kazuhisa, 4,552,605, Cl. 156-273.300.

Toyoda Gosei Co., Ltd.: *See*—
Hayashi, Chikahisa; and Kanayama, Masakatsu, 4,553,212, Cl. 364-507.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, 4,551,950, Cl. 51-165.870.

Toyoda, Mitsuo: *See*—
Fujii, Etsuo; Satoh, Makoto; and Toyoda, Mitsuo, 4,552,414, Cl. 303-115.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Kanai, Takao, 4,552,032, Cl. 74-473.00R.
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,553,208, Cl. 364-431.050.

Transamerica Delaval Inc.: *See*—
Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., 4,552,023, Cl. 73-715.000.

Transmed Corporation: *See*—
Etherington, Roger F.; and Ester, Clayton L., 4,552,155, Cl. 128-766.000.

Travers, Christine: *See*—
Courty, Philippe; Durand, Daniel; Travers, Christine; Chaumette, Patrick; and Forestiere, Alain, 4,552,861, Cl. 502-302.000.

Trayco Inc.: *See*—
Whitney, Thomas H., 4,551,869, Cl. 4-592.000.

Treaster, Mahlon L. Archery sights. 4,552,121, Cl. 124-87.000.

Trenkler, Werner, to Dr. Ing. h.c.F. Porsche AG. Folding roof for vehicles, especially passenger motor vehicles. 4,552,401, Cl. 296-219.000.

Trilling, Peter: *See*—
Dropczynski, Hartmut; and Trilling, Peter, 4,552,316, Cl. 242-56.00R.

Tritsch, Ludwig, to Personal Products Company. Resealable adhesive tab fastener. 4,552,560, Cl. 604-390.000.

Tronich, Wolfgang: *See*—
Arndt, Otto; Papenfuhs, Theodor; and Tronich, Wolfgang, 4,552,970, Cl. 548-543.000.

True Dimension Inc.: *See*—
Sheppard, Joseph R., 4,552,340, Cl. 254-358.000.

Trufyn, Nicholas, to International Business Machines Corporation. User controlled dialog resource switching in a multi-tasking word processor. 4,553,202, Cl. 364-200.000.

Truper, Dirk; and Hermle, Klaus. Inductive proximity switch. 4,553,040, Cl. 307-116.000.

TRW Inc.: *See*—
Berenz, John J.; Dalman, G. Conrad; and Lee, Charles A., 4,551,904, Cl. 29-571.000.
Rau, Bantwal R.; Glaeser, Christopher D.; and Kuekes, Philip J., 4,553,203, Cl. 364-200.000.

Tse, Hing-Cheung, to Procter & Gamble Company, The. Process for preparation of tea color concentrate and product. 4,552,776, Cl. 426-597.000.

Tsou, Dean T.; Denman, Sandra L.; Burrington, James D.; and Cesa, Mark C., to Standard Oil Company, The. Method of making tri-(β-cyanoethyl)amine. 4,552,705, Cl. 260-465.50R.

Tsuchiya, Shozo; Sasaki, Makoto; Oshima, Akio; and Hayashi, Hideo, to Nippon Oil Company, Ltd. Offset printing ink composition. 4,552,923, Cl. 525-68.000.

Tsuda, Akira: *See*—
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.

Tsuda, Yoshihisa, to UOP Inc. Aspartase from a *Bacillus subtilis*. 4,552,846, Cl. 435-232.000.

Tsuge, Takeyoshi; Torisawa, Yoshihiro; Makino, Ayumu; and Kimura, Tsutomu, deceased (by Kimura, Shizuko, legal representative), to Tokyo Electric Co., Ltd. Ink dot printer. 4,552,469, Cl. 400-119.000.
Tsuge, Takeyoshi; Torisawa, Yoshiro; Makino, Ayumu; and Kimura, Tsutomu, deceased (by Kimura, Shizuko, legal representative), to Tokyo Electric Co., Ltd. Ink dot printer. 4,552,472, Cl. 400-124.000.
Tsujii, Katsumi, to Sharp Kabushiki Kaisha. Light emitting diode electrode. 4,553,154, Cl. 357-71.000.
Tsujiuchi, Toshio: *See*—
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, 4,551,950, Cl. 51-165.870.
Tsukamoto, Katsura, to International Business Machines Corporation. Bill storing mechanism for automatic teller machines. 4,552,351, Cl. 271-3.100.
Tsukamoto, Mamoru: *See*—
Saitoh, Hiroshi; Kadooka, Katsuyuki; Tsukamoto, Mamoru; Ono, Shoji; and Ohkawa, Masaki, 4,552,772, Cl. 426-557.000.
Tsurumi-Seiko Co., Ltd., The: *See*—
Suyama, Satoshi, 4,552,016, Cl. 73-170.00A.
Tsuruoka, Takashi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,583, Cl. 71-86.000.
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,552,584, Cl. 71-86.000.
Tsutsumi, Masahiro: *See*—
Mouri, Akihiko; Tabuchi, Yoshinobu; Tsuda, Akira; Tsutsumi, Masahiro; and Ikeda, Kazushige, 4,552,503, Cl. 414-687.000.
Turley, John W.; and Sendzimir, Michael G. Strip wiping system. 4,551,878, Cl. 15-102.000.
Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., to Ciba-Geigy AG. Daylight enlarger. 4,552,452, Cl. 355-27.000.
Turner, S. Richard: *See*—
Thaler, Warren A.; Turner, S. Richard; and Lundberg, Robert D., 4,552,939, Cl. 526-287.000.
Tweet, David E.: *See*—
Weis, Bruce T.; Helmy, Nash N.; Tweet, David E.; and Moechnig, Bruce W., 4,552,573, Cl. 55-312.000.
Twigger, Ernest J.: *See*—
Turner, George F. A. M.; Moore, Michael H.; and Twigger, Ernest J., 4,552,452, Cl. 355-27.000.
Tyler, Arnold L.: *See*—
Borio, Donald C.; Borio, Richard W.; Hale, Gilbert L.; Mehta, Arun K.; and Tyler, Arnold L., 4,552,077, Cl. 110-347.000.
Tyrell, John A.: *See*—
Rosenquist, Niles R.; and Tyrell, John A., 4,552,924, Cl. 525-146.000.
UBE Industries, Ltd.: *See*—
Kunii, Hiroyuki; Sente, Hirohisa; and Hironaka, Kouji, 4,553,016, Cl. 219-121.0LG.
Uchiyama, Hiroaki: *See*—
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.
Udagawa, Takatoshi: *See*—
Inoue, Tsuneo; Nakatani, Kiyoshi; Oda, Kengo; Ishii, Tutomu; Udagawa, Takatoshi; and Shiraishi, Shiro, 4,552,894, Cl. 514-464.000.
Ueguri, Shigeo: *See*—
Kondo, Masatsune; Tabata, Youichiro; Ueguri, Shigeo; Mizuno, Takaji; Segawa, Hirohisa; and Hiramoto, Seigo, 4,553,018, Cl. 219-130.510.
Uematsu, Ikuzo, to Murata Kikai Kabushiki Kaisha. Draft apparatus for a spinning machine. 4,551,887, Cl. 19-244.000.
Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Typewriter having calculating capability. 4,553,219, Cl. 364-705.000.
Ueno, Hiroshi: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.
Ueno, Shyoji: *See*—
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.
Ueno, Yukio: *See*—
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.
Ukai, Toshinao: *See*—
Okazaki, Masaki; Tanabe, Osami; Nagaoka, Satoshi; Mihara, Yuji; and Ukai, Toshinao, 4,552,837, Cl. 430-550.000.
Ulicne, Joseph A.: *See*—
McFrisby, Samuel J., 4,552,371, Cl. 280-20.000.
Umemoto, Makoto: *See*—
Tanabe, Osami; Aoki, Kozo; Ogawa, Akira; and Umemoto, Makoto, 4,552,836, Cl. 430-549.000.
Umemura, Takeaki; Inoue, Ayumu; and Mitsuda, Satoshi, to Sumitomo Chemical Company, Limited. Production of optically active cyclopentenolones. 4,552,703, Cl. 260-466.000.
Union Carbide Corporation: *See*—
Herdle, William B., 4,552,961, Cl. 544-402.000.
Keogh, Michael J., 4,552,941, Cl. 528-16.000.
Kupcikevicius, Vytautas; and Raudys, Vytas, 4,551,884, Cl. 17-49.000.
Ramamurthy, Arakalgud V., 4,552,712, Cl. 264-85.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Cattell, Alan F.; Kirton, John; and Lloyd, Peter, 4,552,782, Cl. 427-66.000.
United States Gypsum Company: *See*—
Powell, Byron E.; Bakhshi, Virendar S.; and Randolph, Donald A., 4,552,683, Cl. 252-189.000.
United States of America
Army: *See*—
Brandt, Howard E., 4,553,068, Cl. 315-4.000.
Ducote, Marjorie E., 4,552,706, Cl. 264-3.00R.
Energy: *See*—
Arlowe, H. Duane, 4,553,026, Cl. 235-451.000.
Fish, Richard H., 4,552,854, Cl. 502-26.000.
Lee, Kien-yin; and Coburn, Michael D., 4,552,598, Cl. 149-47.000.
Murphy, Lawrence M., 4,552,438, Cl. 350-608.000.
Wise, William L., 4,553,078, Cl. 318-592.000.
Health and Human Services: *See*—
Brossi, Arnold, 4,552,962, Cl. 546-74.000.
Interior: *See*—
Shirts, Monte B.; Martin, Dale A.; and Petersen, Allan E., 4,552,730, Cl. 423-82.000.
National Aeronautics and Space Administration: *See*—
Chu, Huai-Pu; and Staugaitis, Charles L., 4,552,784, Cl. 427-192.000.
Kleinberg, Leonard L., 4,553,110, Cl. 331-116.0FE.
St. Clair, Terry L.; and Burks, Harold D., 4,552,931, Cl. 525-432.000.
Warren, Edward L., 4,552,466, Cl. 384-103.000.
Navy: *See*—
Hill, Terry E.; Riley, George R.; Linse, Vonne D.; Green, Sheryll C.; and Tack, Paul G., 4,552,298, Cl. 228-2.500.
U.S. Philips Corporation: *See*—
Auphan, Michel J., 4,552,020, Cl. 73-602.000.
Bates, Robert N.; and Ballard, Philip M., 4,553,266, Cl. 455-327.000.
Brandsma, Johan R.; Bruekers, Alphons A. M. L.; and Kessels, Jozef L. W., 4,553,234, Cl. 370-86.000.
Bryant, Stewart F., 4,553,250, Cl. 375-34.000.
Liehr, Manfred R.; Nolting, Wolfgang; Kobs, Rolf U. D.; and Orlowski, Reiner U., 4,552,301, Cl. 228-263.120.
Peel, Geoffrey C., 4,553,162, Cl. 358-144.000.
Wallis, Manfred, 4,552,347, Cl. 269-322.000.
United Technologies Corporation: *See*—
Burchette, Herbert L., 4,552,386, Cl. 285-187.000.
Horais, Brian J.; and Kocur, Joseph S., 4,552,071, Cl. 102-527.000.
Parker, Frederick D., 4,552,491, Cl. 407-107.000.
University of California, The Regents of the: *See*—
Attia, Yosry A.; and Fuerstenau, Douglas W., 4,552,652, Cl. 209-5.000.
Parsons, Stanley M., 4,552,965, Cl. 546-206.000.
University of Liverpool, The: *See*—
How, Thien V., 4,552,707, Cl. 264-24.000.
University of Waterloo: *See*—
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, 4,552,098, Cl. 122-379.000.
Unno, Kunihiko; Tsujiuchi, Toshio; and Oda, Yukio, to Toyoda Koki Kabushiki Kaisha. Truing apparatus for a grinding wheel with rounded corners. 4,551,950, Cl. 51-165.870.
Uno, Testuyuki: *See*—
Ishikawa, Hiroshi; Uno, Testuyuki; Kano, Masanobu; and Nakagawa, Kazuyuki, 4,552,879, Cl. 514-253.000.
UOP Inc.: *See*—
Tsuda, Yoshihisa, 4,552,846, Cl. 435-232.000.
Urbye, Klaus; and Abendroth, Werner, to Carl Still GmbH & Co., Kg., Firma. Coke oven door closure construction. 4,552,623, Cl. 202-248.000.
Urella, Tony. Detection method and apparatus. 4,552,164, Cl. 137-2.000.
Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Parenteral controlled therapy. 4,552,556, Cl. 604-80.000.
USV Pharmaceutical Corp.: *See*—
Jones, Howard; Magnien, Ernest; Musser, John H.; and Shaikh, Mujahid L., 4,552,876, Cl. 514-234.000.
Utaka, Katsuyuki: *See*—
Akiba, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,553,239, Cl. 372-50.000.
Utsugi, Mikio; and Yamaguchi, Tathuya, to Olympus Optical Co., Ltd. Endoscope. 4,552,129, Cl. 128-4.000.
Utsugi, Shinji: *See*—
Ohno, Yasuo; Seino, Tadashi; Ueno, Yukio; Kariyama, Kenji; Utsugi, Shinji; and Okada, Shigeo, 4,552,312, Cl. 239-585.000.
Utter, Robert E., to American Standard Inc. Scroll machine with discharge passage through orbiting scroll plate and associated lubrication system. 4,552,518, Cl. 418-55.000.
Uustalu, Jaan M., to Protector Agentur AB. Inactivated polyurethane and a method for preparing it. 4,552,817, Cl. 428-423.700.
V. Louison et Cie: *See*—
Louison, Guy, 4,551,995, Cl. 66-203.000.
Vailati, Tony; and Murray, Joseph A., to Olympic Narrow Fabrics Company, Inc. Waistband fabric. 4,551,994, Cl. 66-193.000.
Val, Christian, to Compagnie d'Informatique Militaire, Spatiale et Aeronautique. Electronic component package comprising a moisture-retention element. 4,553,020, Cl. 219-209.000.

Valentine, Theodore W.: *See—*
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van Alst, Gerardus M., to AMP Incorporated. Modular electrical connector for connecting wires in cable ends. 4,552,429, Cl. 339-99.00R.
van den Brink, Franciscus; and Alfenaar, Marinus, to Stamicarbon B.V. Process for removing ammonium-ions in an oxime preparation from a hydroxyl-ammonium salt. 4,552,636, Cl. 204-182.400.
van der Lely, Cornelis. Soil cultivating implements. 4,552,223, Cl. 172-49.500.
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Van Der Velden, Paulus M., to Cordis Europa N.V. Reference electrode assembly. 4,552,625, Cl. 204-1.00T.
van der Wal, Willem J. J.; and Geus, John W., to VEG-Gasinstituut N.V. Process for the reaction of carbon monoxide with steam, with formation of carbon dioxide and hydrogen and use of a catalyst for this purpose. 4,552,750, Cl. 423-656.000.
Van Eenam, Donald N., to Monsanto Company. Styrene viscosity modifier of grafted starch polymer solutions. 4,552,940, Cl. 527-312.000.
Van Melle, Hugh, to Amhil Enterprises Ltd. Segmented spacer ring. 4,552,522, Cl. 425-182.000.
Van Oene, Dale G. Anchor lifting device. 4,552,087, Cl. 114-297.000.
Van Overschelde, Daniel M.: *See—*
Carnewal Jose A. C. L; and Van Overschelde, Daniel M., 4,552,547, Cl. 474-101.000.
van Voskuilen, Dirk F.; and van Voskuilen, Frans. Method for removing pipe coatings. 4,552,594, Cl. 134-34.000.
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Van Zeeland, Anthony J.; and Denley, Ronald S., to Oak Industries Inc. Keyboard switch with pivotal actuator lever. 4,553,009, Cl. 200-340.000.
Vapor Corporation: *See—*
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Varian Associates, Inc.: *See—*
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Graham, Stephen H., 4,552,182, Cl. 138-30.000.
Varshneya, Deepak; Macedo, Pedro B.; and Mohr, Robert K., to Macedo, Pedro B.; and Litovitz, Theodore A. Method of producing shaped foamed-glass articles. 4,552,577, Cl. 65-22.000.
Vartoukian, Artin G.; and Moussaian, Gregoire G., to Singer Company, The. Skeletal frame sewing machine. 4,552,081, Cl. 112-258.000.
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Vaudo, Anthony J.: *See—*
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Vaughan, David E., to Exxon Research and Engineering Co. Process for preparing crystalline zeolite composition ERC-2. 4,552,731, Cl. 423-118.000.
Vaughan, David E. W.: *See—*
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Vayra, Jean, to Commissariat a l'Energie Atomique. Integrated control safety valve. 4,552,173, Cl. 137-490.000.
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Veazey, Sidney E. Solar breeze power package and saucer ship. 4,553,037, Cl. 290-55.000.
Vecchiarelli, Francis, to Hunter Douglas International N.V. Venetian blind assembly including tension means for imparting tension into slat supporting means. 4,552,196, Cl. 160-174.000.
VEG-Gasinstituut N.V.: *See—*
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Vespoli, Nancy P.: *See—*
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Veverka, Edward F.; Holmgren, Nils V.; and Martin, Donald R., to Cooper Industries, Inc. Load interrupter. 4,553,008, Cl. 200-148.00R.
Vezzani, Luciano, to Officine Vezzani S.p.A. Scrap metal press for producing compacted scrap blocks. 4,552,062, Cl. 100-95.000.
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Inami, Mamoru; Ohtsuki, Zenju; Tanaka, Yoshiaki; Mori, Tomohiro; and Hasegawa, Akio, 4,553,179, Cl. 360-66.000.
Narita, Shuichi, 4,553,182, Cl. 360-96.100.
Vikroff, Alexis. Junction for connection and assembly of truncated conical-pyramidal geometric shape for multi-directional elements of three-dimensional structures. 4,552,482, Cl. 403-172.000.
Vilter Manufacturing Corporation: *See—*
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Voegel, Robert L.; and Wright, Kenton B., to Aluminum Company of America. Electrode assembly having improved current distribution for use in an electrolytic reduction cell. 4,552,638, Cl. 204-286.000.
Voest-Alpine Aktiengesellschaft: *See—*
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Vogel, Alan D.: *See—*
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Vogel, Richard E.; and Bowsky, Benjamin, to Emerson Electric Co. Degradation sensing and shut-down means for refrigeration motor-compressor units. 4,551,984, Cl. 62-193.000.
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W.C. Heraeus GmbH: *See—*
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Wada, Tetsuyoshi: *See—*
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Wakamatsu, Kazuhiro; and Kawamata, Yoshio, to Hitachi, Ltd. Compound image recording apparatus. 4,552,449, Cl. 355-3.00R.
Wakamiya, Shunichiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for reading information. 4,553,229, Cl. 369-110.000.
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Wallace, Gary L.; and Kasper, Frank S., to AMCA International Corporation. Automatic trimming feature for a slicing machine. 4,552,048, Cl. 83-23.000.
Wallace, Neil M., to Flexibox Limited. Backup seal with bush in form of radially floating washer. 4,552,368, Cl. 277-27.000.
Wallace, Norman R., to Bechtel International Corporation. Bucket-lift slurry storage apparatus and method. 4,552,460, Cl. 366-196.000.
Wallis, Manfred, to U.S. Philips Corporation. X-Ray apparatus comprising a table-top which is displaceable in the longitudinal direction. 4,552,347, Cl. 269-322.000.
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Wartenberg, Erwin W. Process for the production of patterned lustre coatings on surfaces of bodies. 4,552,785, Cl. 427-229.000.
Wartian, George, to Wartian Lock Co. Door latch mechanism. 4,552,393, Cl. 292-221.000.
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Watanabe, Tatsuo; Ohkawa, Michihisa; and Mizuno, Toshio, to Kokusai Denshin Denwa Kabushiki Kaisha. Carrier power to noise power ratio measuring system for TDMA signals. 4,553,086, Cl. 324-57.00N.
Watanabe, Tetsuro: *See*—
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Wayland, Paul O., to Westinghouse Electric Corp. Arc resistant vapor condensing shield for vacuum-type circuit interrupter. 4,553,007, Cl. 200-144.00B.
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Murphy, Brian R.; Chanock, Robert M.; Webster, Robert G.; and Hinshaw, Virginia S., 4,552,758, Cl. 424-89.000.
Webster, Timothy P.; Bush, Ervin E.; and Sweetland, Roger D., to Cummins Engine Company, Inc. Integral fuel filter head and adapter for multiple fuel filter canisters. 4,552,662, Cl. 210-232.000.
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Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Mine roof support unit having dust suppression means. 4,552,487, Cl. 405-295.000.
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Werner, Anton, to Kuhn S.A. Machine for planting seeds. 4,552,079, Cl. 111-85.000.
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Werners, Theo F. H.; and Drenth, Berend W., to Hydraudyne B.V. Hoisting device with compensated tackle. 4,552,339, Cl. 254-277.000.

West, James C., to Cochrane, Joe Collis, a part interest. Tire side wall cleaner. 4,551,952, Cl. 51-241.00S.

West, Jerry D.; and Vinson, Wayne W. Infant protecting commode insert. 4,551,871, Cl. 4-661.000.

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Wheeler, Douglas J.; Duruz, Jean-Jacques R.; Sane, Ajit Y.; and Derivaz, Jean-Pierre, to ELTECH Systems Corporation. Ceramic oxide electrodes for molten salt electrolysis. 4,552,630, Cl. 204-67.000.

White, Hollis N., Jr. Hydrostatic steering unit with cylindrical slide member within cylindrical valve sleeve. 4,552,519, Cl. 418-61.00B.

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Bugg, John W. J.; and Houlden, Stephen, 4,552,202, Cl. 164-528.000.

Whiteley, Thomas E.: *See*—
Wey, Jong-Shinn; Whiteley, Thomas E.; and Hamlin, James M., 4,552,838, Cl. 430-569.000.

Whitney, Sandra L.: *See*—
Ralston, Paul H.; and Whitney, Sandra L., 4,552,665, Cl. 210-697.000.

Whitney, Thomas H., to Trayco Inc. Floor support for a bathtub. 4,551,869, Cl. 4-592.000.

Wicker, Thomas H., Jr.: *See*—
Barbee, Robert B.; and Wicker, Thomas H., Jr., 4,552,948, Cl. 528-194.000.

Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., to Westinghouse Brake & Signal Co. Braking systems for railway. 4,552,410, Cl. 303-23.00R.

Wicks, Frank D.: *See*—
Mason, Peter G.; Wicks, Frank D.; and Gathje, John C., 4,552,589, Cl. 75-105.000.

Wiers, John W., to Rockwell International Corporation. Support for seat adjusting device. 4,552,405, Cl. 297-375.000.

Wilcox, Jeannine; and Karustis, George A., to Engelhard Corporation. Palladium electroplating and bath thereof. 4,552,628, Cl. 204-47.000.

Wilensky, Joseph, to Kurtis, Soma; and Sloan, Jack C. Method and apparatus for a thermodynamic cycle by use of distillation. 4,551,979, Cl. 60-648.000.

Wiley, Bruce F., to Phillips Petroleum Company. Establishing a differential pressure across a core sample or calibrating a differential pressure transducer. 4,552,011, Cl. 73-4.00R.

Wilhelm, Hermann: *See*—
Deubzer, Bernward; and Wilhelm, Hermann, 4,552,910, Cl. 524-43.000.

Wilkhahn Wikening & Hahne GmbH & Co.: *See*—
Ohl, Herbert, 4,552,406, Cl. 297-445.000.

Wilkins, David R. G.: *See*—
Billington, Donald G.; Brooker, Reginald D.; Powell, Harry; Walker, Roger; Wilkins, David R. G.; and Weaver, Stuart, 4,552,065, Cl. 101-93.330.

Wilkins, Raymond A. S.: *See*—
Wickham, David J.; Wilkins, Raymond A. S.; and Page, Edmund J., 4,552,410, Cl. 303-23.00R.

Wille, Allen R. Carpenter jack. 4,552,337, Cl. 254-106.000.

Willett, Ronald J.: *See*—
Emmett, David P.; Muelling, Duane D.; and Willett, Ronald J., 4,552,015, Cl. 73-113.000.

Williams, Ian G., to Imperial Chemical Industries PLC. Flame retardent polyamide compositions. 4,552,912, Cl. 524-100.000.

Williams, Inc.: *See*—
Hagen, Glenn E., 4,552,514, Cl. 417-332.000.

Williams, Malcolm, to Lucas Industries Limited. Fuel control system for an internal combustion engine. 4,552,113, Cl. 123-436.000.

Williams, Sidney J.: *See*—
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,552,477, Cl. 401-188.00R.

Willimczik, Bernd: *See*—
Anderka, Gerold; Brandt, Joachim; Deblitz, Gerhard; Martens, Rolf; Paschen, Rolf; and Willimczik, Bernd, 4,552,483, Cl. 403-288.000.

Willson, Carlton G.: *See*—
Ito, Hiroshi; MacDonald, Scott A.; Miller, Robert D.; and Willson, Carlton G., 4,552,833, Cl. 430-325.000.

Wilson, Andrew J.: *See*—
Wilson, Robert H.; and Wilson, Andrew J., 4,552,190, Cl. 141-82.000.

Wilson, Robert, to Atlantic Richfield Company. Method of producing a stratified viscous oil reservoir. 4,552,216, Cl. 166-261.000.

Wilson, Robert H.; and Wilson, Andrew J., to James Hamilton & Sons (Engineering) Ltd. Filling machines. 4,552,190, Cl. 141-82.000.

Wilson, Ronald H.: *See*—
Stoll, Robert W.; MacLaury, Michael R.; and Wilson, Ronald H., 4,552,783, Cl. 427-91.000.

Winchell, Jack W., to Huggitt Packaging Company. Backing board insert for food packages. 4,552,789, Cl. 428-132.000.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,552,698, Cl. 260-397.200.

Wise, William L., to United States of America, Energy. Servo control booster system for minimizing following error. 4,553,078, Cl. 318-592.000.

Wissler, Josef H., to Max-Planck Gesellschaft zur Forderung der/Wissenschaften. Method for influencing the immune systems of mammals using leukorecruitin. 4,552,761, Cl. 424-101.000.

Witt, Ronald A., to Falk Corporation, The. Overload protection mechanism for clutches. 4,552,257, Cl. 192-56.00F.

Wix, Douglas R. Safety shield for drill press. 4,552,494, Cl. 408-67.000.

WOCO Franz-Josef Wolf & Co.: *See*—
Wolf, Franz J.; and Pletsch, Hubert, 4,552,543, Cl. 464-83.000.

Woebcke, Herman N.: *See*—
Johnson, Axel R.; Narayanan, Swami; and Woebcke, Herman N., 4,552,644, Cl. 208-78.000.

Wohlwend, Maurice, to Stanley Works, The. Reciprocating linear fluid motor. 4,552,227, Cl. 173-15.000.

Wolf, Franz J.; and Pletsch, Hubert, to WOCO Franz-Josef Wolf & Co. Torsionally elastic coupling with an improved characteristic curve. 4,552,543, Cl. 464-83.000.

Wolfe, James D.; Kimball, Michael E.; and Fruzzetti, Richard E., to Goodyear Tire & Rubber Company, The. One component polyurethane SMC surface coat. 4,552,913, Cl. 524-240.000.

Wolfseder, Alfons: *See*—
Redl, Simon; and Wolfseder, Alfons, 4,552,060, Cl. 99-278.000.

Wolters, Richard H., to Westinghouse Electric Corp. Paper management support rack. 4,552,273, Cl. 211-187.000.

Wong, Ching-Ping, to AT&T Technologies, Inc. Silicone encapsulant containing porphyrin. 4,552,818, Cl. 428-447.000.

Wong, Fred S.; and Grohman, Larry F., to Hydril Company. Subsurface safety valve. 4,552,219, Cl. 166-321.000.

Wood, John: *See*—
Glasson, Peter; and Wood, John, 4,552,075, Cl. 109-52.000.

Wood, John F. B., to Hazelett Strip-Casting Corp. Methods for shaping the casting region in a twin-belt continuous casting machine for improving heat transfer and product uniformity and enhanced machine performance. 4,552,201, Cl. 164-481.000.

Woodhead, David A.: *See*—
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,552,921, Cl. 525-96.000.

Wooldridge, James E., to Allis-Chalmers Corporation. Air flow control system having minimum variation in volume. 4,552,058, Cl. 98-1.500.

Woolner, H. R.: *See*—
Legatti, R. H.; Woolner, H. R.; and Cushing, R. J., Jr., 4,552,018, Cl. 73-431.000.

Worthington, Thomas K.: *See*—
Chainer, Timothy J.; and Worthington, Thomas K., 4,553,258, Cl. 382-3.000.
Chainer, Timothy J.; Gundersen, Steven C.; and Worthington, Thomas K., 4,553,259, Cl. 382-3.000.

Wozniak, Eugene. Separator plate for lead-acid battery. 4,552,823, Cl. 429-81.000.

Wrathall, Robert S., to Motorola, Inc. Current sensing circuit. 4,553,084, Cl. 323-316.000.

Wright, Kenton B.: *See*—
Voegel, Robert L.; and Wright, Kenton B., 4,552,638, Cl. 204-286.000.

Wu, Leon L.: *See*—
Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, 4,553,050, Cl. 307-443.000.

Wu, Yulin; and Mumallah, Naim A., to Phillips Petroleum Company. Microbiocidal anionic sequesterants with polyvalent metal cations for permeability correction process. 4,552,217, Cl. 166-270.000.
Wust, Olivier, to Maschinenfabrik Schrarer AG. Method and apparatus for forming snarl-free thread reserves. 4,552,320, Cl. 242-128.000.
Wydler, Robert: *See*—
Bloch, Peter; and Wydler, Robert, 4,551,954, Cl. 51-287.000.
Wynnyckyj, John R.; Rhodes, Edward; and Marr, Robert, to University of Waterloo. Convection section ash monitoring. 4,552,098, Cl. 122-379.000.
Xerox Corporation: *See*—
Davidson, James R., 4,552,448, Cl. 355-3.0SH.
Franks, William S., Jr.; Randall, John M.; and Swift, Joseph A., 4,553,191, Cl. 361-212.000.
Holladay, Thomas M.; and Holt, L. Bayles, 4,553,171, Cl. 358-263.000.
Hubble, Fred F., III; and Martin, James P., 4,553,033, Cl. 250-353.000.
Kazmaier, Peter M.; Baranyi, Guiseppa; Hsiao, Cheng-kuo; and Burt, Richard A., 4,552,822, Cl. 430-59.000.
Yaeger, John R.; and Morgan, Robert K., to Raychem Corporation. Shape memory effect actuator and methods of assembling and operating therefor. 4,551,974, Cl. 60-527.000.
Yahl, Kenneth R.: *See*—
DeBoer, Edward D.; and Yahl, Kenneth R., 4,552,564, Cl. 8-115.600.
Yamada, Akira: *See*—
Kido, Fusayoshi; Takahashi, Atsushi; Shingu, Shitta; Higuchi, Yoshinori; and Yamada, Akira, 4,553,227, Cl. 369-44.000.
Yamada, Kiyoshi: *See*—
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, 4,552,470, Cl. 400-120.000.
Yamada, Mitsuhiko; and Nakade, Toshiaki, to Dainippon Screen Mfg. Co., Ltd. Picture scanning and recording method. 4,553,172, Cl. 358-280.000.
Yamada, Yasuyuki; Nishizawa, Tsutomu; Mikoda, Tamio; Miyahara, Tooru; and Kikutsugi, Masaharu, to Mitsui Toatsu Chemicals, Inc. Dichroic dye and liquid crystalline composition for color display. 4,552,684, Cl. 252-299.100.
Yamada, Yasuyuki; Miyoshi, Takahito; Okutsu, Toshimitsu; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,552,807, Cl. 428-323.000.
Yamada, Yoshikado: *See*—
Iwamoto, Ken-ichi; Kawano, Tadaaki; Uchiyama, Hiroaki; Fukunaga, Takahiro; Fujiwara, Katsuyoshi; and Yamada, Yoshikado, 4,552,453, Cl. 355-57.000.
Yamaguchi, Naoko: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.
Yamaguchi, Shigehiro: *See*—
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; and Kuroki, Katsuro, 4,552,596, Cl. 148-31.500.
Yamaguchi, Tathuya: *See*—
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Yamaguchi, Yuji: *See*—
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Yamaji, Kazunori: *See*—
Nakamura, Takashi; and Yamaji, Kazunori, 4,553,073, Cl. 315-370.000.
Yamamoto, Hisao: *See*—
Ogiso, Osamu; Yamamoto, Hisao; and Suzuki, Akira, 4,552,671, Cl. 252-8.900.
Yamamoto, Masao; and Fujiwara, Tetsuo, to Kabushiki Kaisha Toshiba. Actuator. 4,551,975, Cl. 60-528.000.
Yamamoto, Tadashi; and Kurata, Masami, to Fuji Xerox Co., Ltd. Picture data reading device. 4,553,160, Cl. 358-75.000.
Yamamoto, Tadashi: *See*—
Imai, Masafumi; Yamamoto, Tadashi; Furuhashi, Hiroyuki; Ueno, Hiroshi; and Inaba, Naomi, 4,552,858, Cl. 502-112.000.
Yamamura, Takashige: *See*—
Kaneko, Fuminori; Yamamura, Takashige; and Matsumoto, Satosi, 4,552,009, Cl. 72-316.000.
Yamanaka, Seisuke: *See*—
Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, 4,553,169, Cl. 358-221.000.
Yamanashi, Masaaki: *See*—
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Yamashiro, Osamu: *See*—
Yoh, Kanji; and Yamashiro, Osamu, 4,553,098, Cl. 324-433.000.
Yamashita, Mitsuo; Oda, Goro; and Tomimori, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polygonal type optical deflector. 4,552,417, Cl. 308-10.000.
Yamashita, Sadahiko: *See*—
Hasegawa, Makoto; Ohnishi, Hiroshi; and Yamashita, Sadahiko, 4,553,264, Cl. 455-189.000.
Yamauchi, Shiro: *See*—
Tabata, Norikazu; Nakayama, Shigeki; Namba, Keisuke; and Yamauchi, Shiro, 4,552,659, Cl. 210-177.000.
Yamauchi, Teruo: *See*—
Kuroiwa, Hiroshi; Kirisawa, Tadashi; Yamauchi, Teruo; and Oyama, Yoshishige, 4,552,116, Cl. 123-489.000.
Yamazaki, Shingo: *See*—
Igarashi, Taizo; Higuchi, Hisao; and Yamazaki, Shingo, 4,552,568, Cl. 44-51.000.
Yamazaki, Taro: *See*—
Sakamoto, Ryuji; and Yamazaki, Taro, 4,552,688, Cl. 252-511.000.
Yamazaki, Yoshio; and Itoh, Takashi, to Konishiroku Photo Industry Co., Ltd. Cleaning device. 4,552,451, Cl. 355-15.000.
Yana, Masasumi; Nagato, Hitoshi; Yamada, Kiyoshi; Ueno, Shyoji; and Shibuya, Kunihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal transfer color printer for printing on sheets of paper. 4,552,470, Cl. 400-120.000.
Yanagi, Kenichi; Taguchi, Toshio; Wada, Tetsuyoshi; Furukawa, Heisaburo; and Wake, Kanji, to Mitsubishi Jukogyo Kabushiki Kaisha; and Nisshin Steel Co., Ltd. Vacuum vapor deposition system. 4,552,092, Cl. 118-718.000.
Yang, Tsen-Shau, to Advanced Micro Devices, Inc. Bandgap reference voltage generator with V_{CC} compensation. 4,553,083, Cl. 323-313.000.
Yano, Takashi, to Ricoh Company, Ltd. Electrostatic image recording method and apparatus. 4,553,149, Cl. 346-153.100.
Yano, Tsutomu: *See*—
Tachita, Ryobun; Yano, Tsutomu; Fukukita, Hiroshi; Fukaya, Kuniaki; and Fukumoto. Akira, 4,552,152, Cl. 128-663.000.
Yasui, Kazuomi: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Kagabu, Shinzo; Kamochi, Atsumi; and Yamaguchi, Naoko, 4,552,586, Cl. 71-94.000.
Yates, David B.: *See*—
Sim, Malcolm F.; and Yates, David B., 4,552,884, Cl. 514-312.000.
Yazaki Sogyo Kabushiki Kaisha: *See*—
Chikasue, Hideo, 4,553,093, Cl. 324-169.000.
Yeda Research and Development Company: *See*—
Margel, Shlomo; and Beitler, Uzi, 4,552,812, Cl. 428-407.000.
Yeda Research & Development Co. Ltd.: *See*—
Patchornik, Abraham; Shai, Yechiel; and Pass, Shimeon, 4,552,922, Cl. 525-54.110.
Yim, Hyung J., to Motorola, Inc. Monolithic zero crossing triac driver. 4,553,041, Cl. 307-252.00A.
Yindra, Leonard J., to Hamilton Industries. Power-operated medical examination table. 4,552,403, Cl. 297-330.000.
Yip, Kin F.; and Charlton, Steven C., to Miles Laboratories, Inc. Compound useful in detecting ions and method of preparing it. 4,552,697, Cl. 260-396.00N.
Yoda, Yukiji: *See*—
Sakata, Hideo; and Yoda, Yukiji, 4,551,919, Cl. 33-1.00M.
Yogo, Teruaki. Bending apparatus. 4,552,006, Cl. 72-149.000.
Yoh, Kanji; and Yamashiro, Osamu, to Hitachi, Ltd. Battery checker. 4,553,098, Cl. 324-433.000.
Yokoyama, Hachirou: *See*—
Kogiso, Takashi; Kishi, Katsutoshi; and Yokoyama, Hachirou, 4,551,969, Cl. 57-264.000.
Yonezawa, Kazuya: *See*—
Iwakiri, Hiroshi; Asada, Masahiro; and Yonezawa, Kazuya, 4,552,947, Cl. 528-126.000.
Yoshida, Kei; and Saotome, Yoichiro, to Chikura Kogyo Kabushiki Kaisha. Door swinging device for automatically swinging doors. 4,551,946, Cl. 49-340.000.
Yoshida, Tatsuya; and Katada, Hirosi, to Hitachi, Ltd. Electronic ignition control system. 4,552,110, Cl. 123-416.000.
Yoshida, Yasuharu, to NEC Corp. Multilevel amplitude modulation demodulator with DC drift compensation. 4,553,102, Cl. 329-133.000.
Yoshihara, Hiroshi: *See*—
Aratani, Tadatoshi; Yoshihara, Hiroshi; and Susukamo, Gohfu, 4,552,972, Cl. 556-35.000.
Yoshikawa, Mitsuru: *See*—
Tanaka, Kazunori; and Yoshikawa, Mitsuru, 4,552,353, Cl. 271-124.000.
Yoshioka, Kazuo: *See*—
Atsumi, Akira; Oguni, Kensaku; Senshu, Takao; Terada, Hirokiyo; and Yoshioka, Kazuo, 4,551,983, Cl. 62-174.000.
Yoshioka, Mitsuru: *See*—
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,552,841, Cl. 435-18.000.
Yoshioka, Osamu; Kajino, Isao; and Yamanaka, Seisuke, to Sony Corporation. Clamp circuit for use in video camera having image pick-up device. 4,553,169, Cl. 358-221.000.
Yoshizaki, Hideo: *See*—
Murakami, Akira; and Yoshizaki, Hideo, 4,552,760, Cl. 424-94.000.
Young, Gillian A.: *See*—
Nicks, Peter F.; and Young, Gillian A., 4,552,908, Cl. 523-504.000.
Young, Ian R., to Picker International Limited. Cored magnet with lightweight large area pole pieces. 4,553,122, Cl. 335-296.000.
Young, James P., to Rockwell International Corporation. Low noise feedback amplifier. 4,553,108, Cl. 330-300.000.
Young, John S.: *See*—
Daniels, William R.; and Young, John S., 4,552,997, Cl. 179-175.30R.
Ysidro, Leonard M., Sr.: *See*—
Foust, Julian D.; Ysidro, Leonard M., Sr.; and Cross, Danny R., 4,552,499, Cl. 414-125.000.
Yuan, Leo: *See*—
Feinberg, Irving; Wu, Leon L.; and Yuan, Leo, 4,553,050, Cl. 307-443.000.
Yudelson, Joseph S.; and Johnson, Thomas M., to Eastman Kodak Company. Macromolecule determination by physical development. 4,552,848, Cl. 436-86.000.

Yui, Hiroshi; Sobajima, Yoshihiro; Higashide, Osamu; Imamura, Tsuyoshi; Okamura, Michiya; and Hattori, Satoru, to Mitsubishi Petrochemical Co., Ltd. Electrically conductive inorganic filler containing propylene polymer compositions. 4,552,689, Cl. 252-511.000.

Zacouto, Fred. Method and apparatus to assist cardiac muscle functioning. 4,552,150, Cl. 128-419.0PG.

Zaruba, John V.: *See*—
Rehkemper, Steven F.; Rosenwinkel, Donald A.; Zaruba, John V.; and Breslow, Jeffrey D., 4,552,363, Cl. 273-241.000.

Zasio, John J.; and Cooke, Larry, to Storage Technology Partners. System for detecting and correcting errors in a CMOS computer system. 4,553,236, Cl. 371-15.000.

Zazzu, Victor: *See*—
Dingwall, Andrew G. F.; and Zazzu, Victor, 4,553,132, Cl. 340-347.0DA.

Zech, Hendrik: *See*—
Forssmann, Bernd; Gerth, Hans-Heinrich; Zech, Hendrik; and Chaussy, Christian, 4,552,348, Cl. 269-324.000.

Zeidler, Manfred: *See*—
Pivit, Erich; Setzer, Helmut; Konig, Raimund; Distelrath, Peter; Hasse, Peter; and Zeidler, Manfred, 4,553,189, Cl. 361-119.000.

Zell, Dale R.: *See*—
Bennett, Benny M.; Meehan, Robert F.; and Zell, Dale R., 4,552,422, Cl. 339-17.0CF.

Zeller, Bary L.: *See*—
Saleeb, Fouad Z.; and Zeller, Bary L., 4,552,767, Cl. 426-395.000.

Zenith Electronics Corporation: *See*—
Campisi, Carl, 4,551,913, Cl. 29-740.000.
Citta, Richard W., 4,553,161, Cl. 358-86.000.
Dam, Robert, 4,553,120, Cl. 335-210.000.
Flasza, Michael D.; and Nienaber, David K., 4,553,141, Cl. 340-703.000.
Strauss, Paul, 4,553,142, Cl. 340-712.000.
Sutton, Leroy A., 4,553,166, Cl. 358-190.000.

Ziegler, Hans J. Apparatus for alternatively and selectively connecting telephone cable shield ground straps to a ground rod and including a ground bracket. 4,552,998, Cl. 200-11.00R.

Zierenberg, Ottfried: *See*—
Lautenschlager, Hans-Heiner; Betzing, Hans; Prop, Gerrit; and Zierenberg, Ottfried, 4,552,869, Cl. 514-77.000.

Zimmer, Johannes. Method of and apparatus for applying a viscous medium to a substrate. 4,552,778, Cl. 427-445.000.

Zimmerman, Michael T.: *See*—
Bowman, Ronald; Zimmerman, Michael T.; and Rich, Robert A., 4,552,023, Cl. 73-715.000.

Zion, Henry E., Jr. Sand blasting apparatus. 4,551,955, Cl. 51-439.000.

Zitz, Alfred: *See*—
Kissich, Arnulf; Schoffmann, Franz; Zitz, Alfred; and Steinbrucker, Gerhard, 4,552,263, Cl. 198-514.000.

Zovko, Carl B.; and Vogel, Alan D., to Pace, Incorporated. Method and apparatus for soldering and desoldering leadless semiconductor modules for printed wiring boards. 4,552,300, Cl. 228-20.000.

Zucker, Stanley; and Schwarting, Fritz. Method of protecting a roadway maintenance and construction site. 4,552,341, Cl. 256-1.000.

Zuk, Robert F.: *See*—
Gould, Dennis R.; and Zuk, Robert F., 4,552,839, Cl. 435-7.000.

Zukoski, Ronald D.: *See*—
Hussain, Zahera J.; and Zukoski, Ronald D., 4,552,693, Cl. 252-522.00A.

ZVS Vyzkumnevyvojovy ustav koncernova ucelova organizace: *See*—
Kuda, Vladimir; Vasicek, Vladimir; Vykydal, Frantisek; and Vystrcil, Jiri , 4,552,188, Cl. 139-435.000.

2JT, Inc.: *See*—
Huntley, James B., 4,552,995, Cl. 179-147.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ametek, Inc.: *See*—
Hyatt, Robert L.; and Niessner, Norbert H., Re. 32,027, Cl. 417-368.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Yamashita, Iwao; and Shimizu, Miyuki, Re. 32,026, Cl. 126-263.000.

Bletso, Nelson C.: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., Re. 32,029, Cl. 525-438.000.

Del Monte Corporation: *See*—
Ross, Edward E., Re. 32,025, Cl. 53-435.000.

Fischer, William K., to Uniroyal, Inc. Dynamically partially cured thermoplastic blend of monoolefin copolymer rubber and polyolefin plastic. Re. 32,028, Cl. 525-194.000.

Frerking, Harlan W., Jr.: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., Re. 32,029, Cl. 525-438.000.

Goodyear Tire & Rubber Company, The: *See*—
Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., Re. 32,029, Cl. 525-438.000.

Hyatt, Robert L.; and Niessner, Norbert H., to Ametek, Inc. Wet pick-up vacuum unit motor bearing air seal. Re. 32,027, Cl. 417-368.000.

Niessner, Norbert H.: *See*—
Hyatt, Robert L.; and Niessner, Norbert H., Re. 32,027, Cl. 417-368.000.

Nissan Motor Company, Limited: *See*—
Yano, Tsuneomi; and Yuzawa, Haruo, Re. 32,030, Cl. 364-431.040.

Pesata, Patrick J., Jr.; Frerking, Harlan W., Jr.; and Bletso, Nelson C., to Goodyear Tire & Rubber Company, The. Process to control the curing reaction between a copolyester resin and an epoxide compound, and a composition formed for that process. Re. 32,029, Cl. 525-438.000.

Ross, Edward E., to Del Monte Corporation. Cocktail filling machine and method. Re. 32,025, Cl. 53-435.000.

Shimizu, Miyuki: *See*—
Yamashita, Iwao; and Shimizu, Miyuki, Re. 32,026, Cl. 126-263.000.

Uniroyal, Inc.: *See*—
Fischer, William K., Re. 32,028, Cl. 525-194.000.

Yamashita, Iwao; and Shimizu, Miyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Structure of warmer. Re. 32,026, Cl. 126-263.000.

Yano, Tsuneomi; and Yuzawa, Haruo, to Nissan Motor Company, Limited. Closed loop controlled auxiliary air delivery system for internal combustion engine. Re. 32,030, Cl. 364-431.040.

Yuzawa, Haruo: *See*—
Yano, Tsuneomi; and Yuzawa, Haruo, Re. 32,030, Cl. 364-431.040.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

A.G. fur industrielle Elektronik AGIE: *See*—
Ullmann, Werner; Schumacher, Bernd; Sieg, Arno; Mattei, Silvano; Fenner, Hans-Ueli; Wettstein, Gottlieb; and Ruh, Herbert, B1 3,891,819, Cl. 219-69.00M.

Anderson, Donald R.: *See*—
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Wistrand, John, to Clairol Incorporated. Hair dryer. 281,360, 11-12-85, Cl. D28-13.000.
Woods, Garry W.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 12, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

7 4,551,857
4,551,858
172 4,551,859
175 4,551,860
425 4,551,861

CLASS 4

213 4,551,865
251 4,551,866
420.4 4,551,867
443 4,551,868
592 4,551,869
613 4,551,870
661 4,551,871

CLASS 5

445 4,551,872
450 4,551,873
453 4,551,874

CLASS 7

138 4,551,875

CLASS 8

101 4,552,562
107 4,552,563
115.6 4,552,564
409 4,552,565

CLASS 12

142 Q 4,551,876

CLASS 14

71.7 4,551,877

CLASS 15

102 4,551,878
301 4,551,879
302 4,551,880

CLASS 16

199 4,551,881
226 4,551,882
370 4,551,883

CLASS 17

49 4,551,884
59 4,551,885
75 4,551,886

CLASS 19

244 4,551,887

CLASS 23

313 R 4,552,566

CLASS 24

30.5 P 4,551,888
196 4,551,889
565 4,551,890
669 4,551,891

CLASS 28

166 4,551,892

CLASS 29

33 M 4,551,893
130 4,551,894
148.4 R 4,551,895
156.4 R 4,551,896
235 4,551,897
4,551,898
241 4,551,899
408 4,551,900
564.6 4,551,901
568 4,551,902
4,551,903
571 4,551,904
4,551,905
4,551,906
4,551,907
4,551,908
4,551,909
576 S 4,551,912
576 W 4,551,910
4,551,911
740 4,551,913
837 4,551,914
858 4,551,915

CLASS 30

50 4,551,916
161 4,551,917
347 4,551,918

CLASS 33

1 M 4,551,919
257 4,551,920
366 4,551,921
414 4,551,922
476 4,551,923

CLASS 34

1 4,551,924
4 4,551,925
23 4,551,926
82 4,551,927
4,551,928

CLASS 36

11 4,551,929
30 R 4,551,930
117 4,551,931
4,551,932
120 4,551,933

CLASS 40

535 4,551,934
584 4,551,935

CLASS 42

42 R 4,551,936
74 4,551,937

CLASS 43

4.5 4,551,938
21.2 4,551,939
42.11 4,551,940
107 4,551,941

CLASS 44

13 4,552,567
51 4,552,568
71 4,552,569

CLASS 47

14 4,551,942
41 R 4,551,943

CLASS 49

31 4,551,944
221 4,551,945
340 4,551,946

CLASS 51

34 H 4,551,947
98 R 4,551,948
164.1 4,551,949
165.87 4,551,950
170 EB 4,551,951
241 S 4,551,952
268 4,551,953
287 4,551,954
439 4,551,955

CLASS 52

12 4,551,956
90 4,551,957
309.12 4,551,959
309.4 4,551,958
648 4,551,960
743 4,551,961

CLASS 53

131 4,551,962
148 4,551,963
374 4,551,964
435 Re.32,025
463 4,551,965
571 4,551,966

CLASS 55

20 4,552,570
21 4,552,571
36 4,552,572
312 4,552,573
501 4,552,574

CLASS 56

13.7 4,551,967
16.4 4,551,968

CLASS 57

264 4,551,969
339 4,551,970

CLASS 60

39.281 4,551,972
39.53 4,551,971
477 4,551,973
527 4,551,974
528 4,551,975
533 4,551,976
611 4,551,977
641.13 4,551,978
648 4,551,979
698 4,551,980

CLASS 62

70 4,551,981
130 4,551,982
174 4,551,983
193 4,551,984
235 4,551,985
239 4,551,986
324.5 4,551,987
457 4,551,988
468 4,551,989
4,551,990
476 4,551,991
514 R 4,551,992
544 4,552,575

CLASS 63

31 4,551,993

CLASS 65

2 4,552,576
22 4,552,577
29 4,552,578
346 4,552,579

CLASS 66

193 4,551,994
203 4,551,995

CLASS 68

20 4,551,996

CLASS 70

38 A 4,551,997
69 4,551,998
159 4,551,999
185 4,552,000
208 4,552,001

CLASS 71

3 4,552,580
61 4,552,581
73 4,552,582
86 4,552,583
4,552,584
88 4,552,585
94 4,552,586

CLASS 72

19 4,552,002
38 4,552,003
60 4,552,004
68 4,552,005
149 4,552,006
239 4,552,007
243 4,552,008
316 4,552,009
391 4,552,010

CLASS 73

4 R 4,552,011
59 4,552,012
61.1 C 4,552,013
105 4,552,014
113 4,552,015
170 A 4,552,016
198 4,552,017
431 4,552,018
584 4,552,019
602 4,552,020
644 4,552,021
647 4,552,022
715 4,552,023
821 4,552,024
846 4,552,025
861.24 4,552,026
861.53 4,552,027
862.04 4,552,028

CLASS 74

96 4,552,029
462 4,552,030
473 R 4,552,031
4,552,032
479 4,552,033
547 4,552,034
581 4,552,035
705 4,552,036
805 4,552,037

CLASS 75

12 4,552,587
84.4 4,552,588
105 4,552,589
246 4,552,590

CLASS 81

57.38 4,552,038
64 4,552,039
65 4,552,040
470 4,552,041
476 4,552,042
490 4,552,043
4,552,044

CLASS 82

21 R 4,552,045
36 A 4,552,046
102 4,552,047

CLASS 83

23 4,552,048
27 4,552,049
685 4,552,050

CLASS 84

1.24 4,552,051
473 4,552,052

CLASS 89

1.13 4,552,053

CLASS 91

492 4,552,054

CLASS 92

5 R 4,552,055
29 4,552,056
176 4,552,057

CLASS 98

1.5 4,552,058
115.1 4,552,059

CLASS 99

278 4,552,060

CLASS 100

53 4,552,061
95 4,552,062

CLASS 101

35 4,552,063
93.05 4,552,064
93.33 4,552,065
152 4,552,066
216 4,552,067
415.1 4,552,068
420 4,552,069

CLASS 102

290 4,552,070
527 4,552,071

CLASS 104

88 4,552,072

CLASS 105

154 4,552,073
224.1 4,552,074

CLASS 106

18.33 4,552,591
30 4,552,592
291 4,552,593

CLASS 109

52 4,552,075

CLASS 110

347 4,552,076
4,552,077
4,552,078

CLASS 111

85 4,552,079

CLASS 112

68 4,552,080
258 4,552,081

CLASS 114

26 4,552,082
61 4,552,083
74 R 4,552,084
84 4,552,085
242 4,552,086
297 4,552,087

CLASS 116

28.1 4,552,088
63 P 4,552,089
204 4,552,090

CLASS 118

620 4,552,091
718 4,552,092

CLASS 119

17 4,552,093
27 4,552,094
53 4,552,095
155 4,552,096

CLASS 122

4 D 4,552,097
379 4,552,098
451.1 4,552,099

CLASS 123

2 4,552,100
73 AD 4,552,101
179 H 4,552,102
186 4,552,103
192 R 4,552,104
198 A 4,552,106
198 R 4,552,105
240 4,552,107
270 4,552,108
339 4,552,109
416 4,552,110
425 4,552,111
432 4,552,112
436 4,552,113
481 4,552,114
489 4,552,115
4,552,116
506 4,552,117
609 4,552,118
617 4,552,119

CLASS 124

1 4,552,120
87 4,552,121

CLASS 125

14 4,552,122

CLASS 126

263 Re.32,026
369 4,552,123
413 4,552,124
437 4,552,125
451 4,552,126

CLASS 128

1 D 4,552,127
1 R 4,552,128
1.5 4,552,134
4 4,552,129
4,552,130
6 4,552,131
38 4,552,132
44 4,552,133
78 4,552,135
92 E 4,552,136
152 4,552,137
156 4,552,138
200.14 4,552,139
201.25 4,552,140
205.12 4,552,141
207.16 4,552,142
303.14 4,552,143
305 4,552,146
330 4,552,147
334 C 4,552,148
402 4,552,149
419 PG 4,552,150
510 4,552,144
630 4,552,145
653 4,552,151
663 4,552,152
677 4,552,153
702 4,552,154
703 4,552,156
766 4,552,155
786 4,552,157

CLASS 131

94 4,552,158

CLASS 132

9 4,552,159
73 4,552,160
88.5 4,552,161

CLASS 134

34 4,552,594
57 R 4,552,162
100 4,552,163

CLASS 136

5 4,552,847

CLASS 137

2 4,552,164
3 4,552,165
15 4,552,166
4,552,167
101 4,552,168
115 4,552,169
318 4,552,170
359 4,552,171
484.6 4,552,172
490 4,552,173
527.2 4,552,174
571 4,552,175
625.28 4,552,177
625.4 4,552,176
625.46 4,552,178
625.65 4,552,179
625.66 4,552,180
875 4,552,181

CLASS 138

30 4,552,182
99 4,552,183

CLASS 139

66 R 4,552,184
91 4,552,185
100 4,552,186
434 4,552,187
435 4,552,188

CLASS 141

80 4,552,189
82 4,552,190

CLASS 144

3 D 4,552,191
136 C 4,552,192
144.5 4,552,193

CLASS 148

1.5 4,552,595
31.5 4,552,596

CLASS 149

2 4,552,597
47 4,552,598

CLASS 152

410 4,552,194

CLASS 156

50 4,552,599
73.1 4,552,600
79 4,552,601
157 4,552,602
167 4,552,603
246 4,552,604
273.3 4,552,605
280 4,552,606
330 4,552,607
351 4,552,608
358 4,552,609
384 4,552,610
391 4,552,611
494 4,552,612
515 4,552,613
640 4,552,614

CLASS 158

659.1 4,552,615

CLASS 160

168 R 4,552,195
174 4,552,196

CLASS 162

19 4,552,616
103 4,552,617
157.1 4,552,618
336 4,552,619
358 4,552,620

CLASS 164

34 4,552,197
122.2 4,552,198
423 4,552,199
454 4,552,200
481 4,552,201
528 4,552,202

CLASS 165

1 4,552,203
10 4,552,204
18 4,552,205
48.2 4,552,212
80.3 4,552,206
95 4,552,207
104.22 4,552,208
133 4,552,209
134.1 4,552,210
160 4,552,211

CLASS 166

88 4,552,213
259 4,552,214
261 4,552,216
270 4,552,217
278 4,552,215
319 4,552,218
321 4,552,219
369 4,552,220

CLASS 169

22 4,552,221
57 4,552,222

CLASS 172

49.5 4,552,223
324 4,552,224
513 4,552,225
815 4,552,226

CLASS 173

15 4,552,227

CLASS 174

52 R 4,552,987
74 R 4,552,988
103 4,552,989
117 FF 4,552,990

CLASS 175

4.6 4,552,234
228 4,552,228
240 4,552,229
321 4,552,230
330 4,552,231
337 4,552,232
371 4,552,233

CLASS 177

1 4,552,235
25 4,552,236
4,552,237

CLASS 178

19 4,552,991
69 G 4,552,992

CLASS 179

2 A 4,552,993
16 AA 4,552,994
147 4,552,995
175.2 C 4,552,996
175.3 R 4,552,997

CLASS 180

139 4,552,238
140 4,552,239
142 4,552,240
249 4,552,241

CLASS 181

144 4,552,242
169 4,552,243

CLASS 182

82 4,552,244
97 4,552,245
116 4,552,246
4,552,247
142 4,552,248

CLASS 185

39 4,552,249

CLASS 187

9 E 4,552,250

CLASS 188

24.21 4,552,251
73.1 4,552,252
73.38 4,552,253
328 4,552,254

CLASS 192

0.052 4,552,256
18 A 4,552,255
56 F 4,552,257
67 A 4,552,258
107 M 4,552,259

CLASS 198

345 4,552,260
425 4,552,261
447 4,552,262
514 4,552,263

CLASS 200

11 R 4,552,998
34 4,552,999
43.05 4,553,006
50 B 4,553,000
61.41 4,553,001
144 B 4,553,002
4,553,003
4,553,007
148 A 4,553,004
148 R 4,553,008
153 LA 4,553,005
340 4,553,009

CLASS 202

84 4,552,621
241 4,552,622
248 4,552,623

CLASS 204

1 T 4,552,624
4,552,625
20 4,552,626
27 4,552,627
32.1 4,552,641
47 4,552,628
55 R 4,552,629
67 4,552,630
98 4,552,631
107 4,552,632
159.21 4,552,633
159.23 4,552,634
182.4 4,552,635
4,552,636
243 R 4,552,637
286 4,552,638
298 4,552,639
301 4,552,640

CLASS 206

45.14 4,552,264
159 4,552,265
220 4,552,266
334 4,552,267
455 4,552,268
632 4,552,269

CLASS 208

10 4,552,642
48 AA 4,552,643
78 4,552,644
80 4,552,645
90 4,552,646
120 4,552,647
4,552,648
127 4,552,649
216 PP 4,552,650

CLASS 209

1 4,552,651
5 4,552,652
421 4,552,653
425 4,552,654

CLASS 210

108 4,552,655
137 4,552,656
169 4,552,657
4,552,658
177 4,552,659
225 4,552,660
232 4,552,661
4,552,662
605 4,552,663
695 4,552,664
697 4,552,665
710 4,552,666
734 B1 3,790,476
757 4,552,667
759 4,552,668
798 4,552,669

CLASS 211

17 4,552,270
41 4,552,271
88 4,552,272
187 4,552,273

CLASS 212

232 4,552,274

CLASS 215

12 R 4,552,275
100 A 4,552,276
249 4,552,277
277 4,552,278
318 4,552,279

CLASS 219

10.55 B 4,553,011
10.55 E 4,553,010
69 M B1 3,891,819
69 R 4,553,012
74 4,553,013
75 4,553,014
121 ED 4,553,015
121 LA 4,553,017
121 LG 4,553,016
130.51 4,553,018
146.22 4,553,019
209 4,553,020
234 4,553,021
275 4,553,022
301 4,553,023
335 4,553,024
461 4,553,025

CLASS 220

1 T 4,552,280
5 A 4,552,281
20 4,552,282
304 4,552,283
453 4,552,284

CLASS 221

13 4,552,285

CLASS 222

145 4,552,286
146.5 4,552,287
482 4,552,288
600 4,552,289

CLASS 225

2 4,552,290
96.5 4,552,291

CLASS 226

142 4,552,294
195 4,552,295

CLASS 227

109 4,552,296
120 4,552,297

CLASS 228

2.5 4,552,298
5.7 4,552,299
20 4,552,300
183 4,552,292
263.12 4,552,301

CLASS 229

1.5 B 4,552,293

CLASS 232

35 4,552,302

CLASS 235

451 4,553,026
474 4,553,027

CLASS 236

44 C 4,552,303
46 F 4,552,304

CLASS 237

69 4,552,305

CLASS 239

29 4,552,306
57 4,552,307
265.19 4,552,309
457 4,552,308
533.5 4,552,310
585 4,552,311
4,552,312

CLASS 242

18 A 4,552,313
25 R 4,552,314
55.3 4,552,315
56 R 4,552,316
65 4,552,317
84.1 K 4,552,318
107.4 A 4,552,319
128 4,552,320
130 4,552,321
198 4,552,322
865 R 4,552,323

CLASS 244

104 FP 4,552,324
118.5 4,552,325
129.5 4,552,326
137 R 4,552,327

CLASS 249

67 4,552,328
134 4,552,329

CLASS 250

201 4,553,028
296 4,553,029
307 4,553,030
339 4,553,031
4,553,032
353 4,553,033
458.1 4,553,034
566 4,553,035
578 4,553,036

CLASS 251

30.01 4,552,330
95 4,552,331
148 4,552,332
149.9 4,552,333
240 4,552,334
315 4,552,335
331 4,552,336

CLASS 252

8.5 C 4,552,670
8.55 C 4,552,672
8.55 D 4,552,673
8.55 R 4,552,674
4,552,675
8.9 4,552,671
20 4,552,676
33.6 4,552,677
49.3 4,552,678
90 4,552,679
102 4,552,680
140 4,552,681
186.26 4,552,682
189 4,552,683
299.1 4,552,684
355 4,552,685
392 4,552,686
500 4,552,687
511 4,552,688
4,552,689
512 4,552,690
514 4,552,691
522 A 4,552,693
528 4,552,692

CLASS 254

106 4,552,337
134.3 FT 4,552,338
277 4,552,339
358 4,552,340

CLASS 256

1 4,552,341

CLASS 260

112.5 R 4,552,701
239 BD 4,552,694
239.3 B 4,552,695
245.2 T 4,552,696
396 N 4,552,697
397.2 4,552,698
404.5 4,552,699
428 4,552,702
463 4,552,704
465.5 R 4,552,705
466 4,552,703

CLASS 264

3 R 4,552,706
24 4,552,707
53 4,552,708
64 4,552,710
65 4,552,711
85 4,552,712
162 4,552,713
171 4,552,714
309 4,552,715
328.1 4,552,716
504 4,552,709
549 4,552,717

CLASS 266

175 4,552,342
200 4,552,343

CLASS 267

64.11 4,552,344

CLASS 269

43 4,552,345
322 4,552,346
4,552,347
324 4,552,348

CLASS 270

54 4,552,349

CLASS 271

3 4,552,350
3.1 4,552,351
10 4,552,352
124 4,552,353
163 4,552,354

CLASS 272

8 R 4,552,355
137 4,552,356

CLASS 273

1 GG 4,552,357
34 A 4,552,358
54 B 4,552,359
85 G 4,552,360
157 R 4,552,361
237 4,552,362
241 4,552,363
260 4,552,364
425 4,552,365

CLASS 277

1 4,552,366
4,552,367
27 4,552,368
226 4,552,369

CLASS 279

1 S 4,552,370

CLASS 280

20 4,552,371
87.04 R 4,552,372
276 4,552,373
411 R 4,552,374
415 R 4,552,375
477 4,552,376
515 4,552,377
632 4,552,378
661 4,552,379
728 4,552,380
752 4,552,381

CLASS 281

45 4,552,382

CLASS 283

83 4,552,383

CLASS 285

111 4,552,384
4,552,385
187 4,552,386
238 4,552,387
363 4,552,388
379 4,552,389
420 4,552,390

CLASS 290

55 4,553,037

CLASS 292

5 4,552,391
181 4,552,392
221 4,552,393
307 B 4,552,394
342 4,552,395

CLASS 294

27.1 4,552,396
86.4 4,552,397

CLASS 296

37.12 4,552,399
185 4,552,400
219 4,552,401

CLASS 297

284 4,552,402
330 4,552,403
4,552,404
375 4,552,405
445 4,552,406
476 4,552,407
483 4,552,408

CLASS 299

2 4,552,409

CLASS 303

7 4,552,398
23 R 4,552,410
37 4,552,411
67 4,552,412
106 4,552,413
115 4,552,414

CLASS 307

10 AT 4,553,038
66 4,553,039
116 4,553,040
252 A 4,553,041
263 4,553,042
270 4,553,043
4,553,044
279 4,553,045
289 4,553,046
297 4,553,047
350 4,553,048
443 4,553,049
4,553,050
475 4,553,051
494 4,553,052
530 4,553,053
597 4,553,054

CLASS 308

3.8 4,552,415
6 C 4,552,416
10 4,552,417

CLASS 310

62 4,553,055
80 4,553,056
242 4,553,057
268 4,553,058
328 4,553,059
332 4,553,061
333 4,553,060

CLASS 312

242 4,552,418
281 4,552,419

CLASS 313

93 4,553,062
325 4,553,063
448 4,553,064
481 4,553,065
546 4,553,067
580 4,553,066

CLASS 315

4 4,553,068
111.81 4,553,069
209 R 4,553,070
244 4,553,071
4,553,072
370 4,553,073

CLASS 318

130 4,553,074
254 4,553,075
282 4,553,076
568 4,553,077
592 4,553,078
626 4,553,079
696 4,553,080

CLASS 320

43 4,553,081

CLASS 323

288 4,553,082
313 4,553,083
316 4,553,084

CLASS 324

51 4,553,085
57 N 4,553,086
65 P 4,553,087
66 4,553,088
71.1 4,553,089
73 AT 4,553,090
74 4,553,091
106 4,553,092
169 4,553,093
225 4,553,094
230 4,553,095
309 4,553,096
338 4,553,097
433 4,553,098
458 4,553,099

CLASS 328

63 4,553,100

CLASS 329

50 4,553,101
133 4,553,102

CLASS 330

107 4,553,103
129 4,553,104
145 4,553,105
272 4,553,106
288 4,553,107
300 4,553,108

CLASS 331

25 4,553,109
116 FE 4,553,110

CLASS 333

1 4,553,111
21 R 4,553,112
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